Ethiopian Journal Of Reproductive Health

December 2012, Volume 6, Number 1

ORGAN OF THE ETHIOPIAN SOCIETY OF BOSTERICIANS AND GYNECOLOGISTS

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Ethiopian Journal of Reproductive Health

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Addressing the challenge of Unmet Reproductive Health Needs.

Tekele-AB Mekbib

This particular issue of the Ethiopia Journal Of reproductive Health (EJRH) Is timely As it follows the recent national family planning (FP) symposium held at Bahri Dar In November 2012. The symposium issued an important Declaration on two crucial Courses of action towards addressing the unmet needs of FP program, inter alia and it called for 11.2 million Ethiopian mothers toe benefit from the program. They also called on development partners to augment their support by mobilizing resources and aligning with government's direction (1). The Federal Ministry of health (FMoH) must therefore be commended for its determined efforts in organizing and delivering one of the best symposiums to dat. Its declaration will not only be remembered for inspiring the highest priority and support in promoting the FP agenda but also providing and important road map for the international FP Conference, due to be held in Addis Ababa during the last quarter of 2013.

The articles in this issue are devoted to exploring the many facets of FP challenges which include integration with HIV/AIDS services, desire for children, the use of FP by people living with HIV (PLHIV) and on anti-retroviral treatment (ART), the willingness of students to use female condoms (FC) and emergency contraception (EC).

The first article examined the 2005 Ethiopian health survey (EDHS) and discussed factors influencing use of the modern methods of FP among married women. Environment, education, and wealth index were found to be statistically probable predictors of the practice of modern FP. Therefore the study concluded that differences in fertility level and the practice of modern FP methods mirrored the differences in socio-economic status and place of residence (2).

Regarding issues of integration of FP and HIV/AIDS services another article discussed the situation in chronic HIV care clinics in Dessie and called for improvement of services. It concluded that although the policy environment integration in condu7cive, and favored by (PLHIV) clients and service providers, the Program has a limited capacity in both workforce and logistics and thereby faces many challenges (3).

The next article assessed the fertility desire and FP utilization among PLGIV and on ART. This showed the desire for children was generally high but variations were detected in respect of gender, marital status, and the PLHIV's existing family size. FP utilization among people on ART was high nearly doubling once they knew their HIV status. FP methods were more likely to be used by those who were married and those who were on ART for more than two years. Furthermore, the study revealed the high desire for children supersedes the concern for the prevention of mother to child transmission counseling program (4).

This issued also contains two studies investigating the willingness the level of FP knowledge, attitude were found to be the major barriers for utilization by female students in eight colleges in Harare. The study recommended that FM.H and partner organization promote the benefits and use of FC primarily for the prevention of HIV and sexually transmitted infections (STI) (5). Another cross-sectional study carried out in

Arbaminch concluded that knowledge and utilization of EC by was low, although attitudes were relatively high, with the contraceptive pill being used as the method of EC by most of the respondents. The study recommended due to the lack of educational program and service promotion of EC, there was need for educational campaigns to be carried out in colleges and universities on RH issues in general and EC in particular (6).

Despite limited analysis of EDHS data on different indicators in the country, and article by Eunice Muthengi (7) about early marriage and female schooling in Ethiopia was vigorously explored. The analysis employed propensity score matching techniques to estimate the effects of early marriage on educational attainment after adjusting for selection bias. Findings from this study implied that successful programs and policies to delay the age of marriage could have a significant impact on women's education in Ethiopia. The study concluded that delaying the age of marriage increases their access to capital, which is likely to increase their access to economic resources and enhance their human capabilities. However, more research in needed to establish the causal relationships between observed outcomes.

A team of researchers from Ayder Teaching Hospital (ATH), although facility based, studied severe acute maternal morbidity (SAMM) and mortality (8). The findings showed that the SAMM rate at ATH was 101 per 1,000 deliveries whereas the mater5nal mortality ration was 427 per 100,000 live births. This study recommended that ATH had to develop standard criterion for inclusion of SAMM cases, based on the experience of other health facilities. It also emphasized the need for a prospective study to determine the level of substandard care. Therefore closer investigations are required into suboptimal level of maternity care, which comprises of poor standards of health, transportation and standards of health care facility.

The next two articles are related to determinants of premarital sexual intention and sexual behavior of high school and university students in Samara University in relation to STI, and HIV/AIDS. This study employed both qualitative and quantitative methods. This study employed both qualitative and quantitative methods. This study has revealed the correlation STIs and HIV/AIDS and the risky sexual behavior of the students. It recommended the promotion of RH education through effective programs for university students based in rural settings like Samara University (10).

References

1. Symposium proceedings: national Family planning symposium oral presentations and poster exhibitions. Bahir Dar Novermber 25/28/2012.
2. Aklilu Demissie. Factors influencing the practice of modern family planning methods among married women in Ethiopia: Evidence from the 2005 Ethiopian Demographic Health survey.
   Ethiop J Repro Health, 2012;6(1):4.13.
3. Wassye Yitagess, Aylele Belachew. Status of family planning service integration for women in their reproductive age in chronic HIV care clinics in Dessie town, north East Ethiopia.
   Ethiop J Repro Healt,2012;6(1:)14-21

4. Legese Tadesse, Ayele Belachew Assessment of fertility desire and family planning utilization among people living with HIV and on anti-retroviral treatment, Asella Hspital, Arsi Zone, Oromia Region.
Ethiop J Repro Healt,2012;6(1:)22-29
5. Dayna Aragu, Amare Deribew, Ewnetu Firdawek, Girma Temam. Willingness to use female condom by college students in Ethiopia: a NEgelected intervention.
Ethiop J Repro Healt,2012;6(1:)30-36
6. Ewnetu Firdawek, Dayan Aragu, Mekdes Konale. Knowledge, attitude and utilization of emergency contraception; a cross sectional study among female university and college students.
Ethiop J Repro Healt,2012;6(1:)37-45
7. Eunice Muthengi. Early marriage and female schooling in Ethiopia. Ethiopia. Ethiop J Repro Healt,2012;6(1:)46-55
8. Goitom Berehane, Amanuel Gessessew, Jos Van Rossmalen, Thomas Van Den Akker. Obstertric near-miss and maternal death: the case of Ayder Teaching Hospital, Mekelle, Ethiopia. Ethiop J Repro Healt,2012;6(1:)55-63
9. Ejigu Gebeye, Telake Azale, Kassahun Alemu. Determinants of premarital sexual initiation among Wukro high school and preparatory students, Eastern Tigray, Northern Ethiopia.
Ethiop J Repro Healt,2012; 6(1:)46-55
10. Selam Yirga, Tesfaye Gobena, Gudina Egata. Sexual Behavior of university student in Ethiopia: Ethiop J Repro Healt,2012;6(1:)55-63

ORIGINAL ARTICLE

Factors influencing the practice of modern family planning methods among married women in Ethiopia: evidence from the 2005 Ethiopian Demographic and health survey

Akililu Demissie

Abstract

Background: Ethiopia IS characterized by high fertility rate even when compared with many sub sharan African countries. The practice of modern family planning (FP) methods is also low. Thus, exploring factors that determine the practice of modern FP methods is vital in order to come up with strategies that alleviate the consequences of unmet need for FP.

Objective: the objective of this study was to examine and determine factors that predict of modern FP among married women of reproductive age group in Ethiopia and illustrate aspects of data limitations and efforts on how to apply methods in providing estimations about selected determinants of contractive use.

Method: the 2005 Ethiopian Demographic and health survey (EDHS) was the source of data. The survey had collected between the independent explanatory variables and the practice of modern FP methods; and multivariate logistic regression analysis was employed in predicting which factors determined contraceptive practice.

Results: Univariate analysis of the independent explanatory variables including age of women, place of residence, number or living children, education and wealth index were found to be statistically significantly associated with the practice of modern FP methods. Multivariate logistic regression analysis has shown that place of residence, education level and wealth index to be potential predictors of the practice of modern FP methods.

Conclusion: differences in fertility level and the practice of modern FP methods reflect differences in socio-economic status and place of residence (Ethiopian Journal of reproductive health, 2012;6(1):4-13).

Key words: family planning modern methods. Married women, practices, Ethiopia

Introduction

It has been decades since sub-sharan Africa (SSA) countries have adopted and incorporated reproductive health (RH) services to be part of essential elements of primary healthcare delivery and the dissemination of modern family planning (FP) methods as a means of preventing unwanted pregnancy, spacing births or limiting family size in order to fulfill women's desires and also ensure their safety and newborns (1). Although there has been a progressive rise in contraceptive prevalent in most SSA, the demand level and in effect contributing to the slow fertility decline on the continent (2,3).

Ethiopia Also ranks among counties with a relatively high fertility rates (4). The average expressed desire of family size for Ethiopian woman. Although there had been a decline in total fertility rate (TFR) from 6.4 children per woman in 1990, to 5.9 in 2000 to 5.4 in 2005 (5), a 5.4 fertility rate presented a differential of 1.4 extra children which was the fourth largest in Africa (6).

Evidence from the 2005 Ethiopia demographic health survey (EDHS) (5) showed that 34% of married women in Ethiopia had unmet need for FP. The large unmet need indicated how women wanting to avoid pregnancy are not practicing any methods. The findings also showed that 42% married women wanted to stop child bearing altogether while 35% wanted to delay at least by two years before having any additional child.

A2008 study indicated that 42% of pregnancies were unintended resulting in 382,000 induced abortions where approximately 14% suffered post abortion complications (7). The gap between the actual fertility rate and the desired family size is also wide resulting in rapid population growth (6). Women were left vulnerable to the consequences of unintended pregnancies such as unsafe abortion practices or end up dealing with the economic challenges of a larger family size (5).

There are a number of factors that determine the fertility intentions of individuals. These include the most significant proximate determinants of fertility such as contraceptive practice and effectiveness, induced abortion, proportion married, and postpartum infecundability which have direct effect on fertility (8,9). The practice of FP methods is also influenced by demographic,

Socio-economic, cultural, religious and knowledge factors of individuals in the society (10-12)

Previous surveys showed that age of women to have significant effect in the practice of modern FP methods. Low contraceptive prevalence was observed in women age group 15-19 and the of 45-49 (13-15). It was argued that recent marriage and low parity as some of the plausible reasons for modern FP methods whicle in older age group the assumption was that they were less fecund and less susceptible to pregnancy.

Regional variations in contraceptive practice largely reflect differentials in socioeconomic development and access to wider and better health care services. In developing countries studies showed that women who reside in rural areas tend to have a lower modern contraceptive practice rate compared with those who reside in urban areas (16,17). in addition, cultural and religious values and norms are more pronounced in rural areas that discourages the use of contraceptives in limiting or preventing pregnancies (18,19).

It was also found that women who have reached their desired family size practiced more FP methods than those women who have yet to bear children in wedlock (13,20, 21). Rutenberg and others (14) have found that the percentage of women who have ever used contraception sharply rose soon after the birth of the first childe and again after three or four children were born to a family as compared to childless married women.

Theories are abound with regard to casual association of education to the practice of modern contraceptives. Educations is considered a time intensive engagement and women are likely to have fewer number of children since they will be spending more time at school than their uneducated counterparts during their child bearing age (22,23). Also, the opportunity education provides for better employment thereby the economic incentive makes it less attractive to have large family size (22,24) chose and Tsuya (25) argue that women may find it less convenient to tend to childcare once they are engaged in formal sector employment. Another school of thought is that education changes the power relationship with their partners and the autonomy it brings about gives them more leverage in the control of their fertility desires (26,27).

Results from meta-analysis of studies demonstrate wealth as having the attraction for higher fertility especially in the agricultural sector of the economy where large family size is considered an asset (28). However, it is also argued that in the long run wealth having a diminishing association with fertility as the cost of raising children and their education grows outstripping the material benefits that may come from an increased family size thus influencing reduced desire for high fertility (18). Changes in new values and

individualistic satisfaction have also been cited as some of the reasons in the transformation of societies from high fertility to low fertility and the change in family structure from upward to downward wealth flow fueled by education (29).

In the study women who had 1-2 and 3-4 children each were almost 3 and 4 times as likely to practice modern FP methods, respectively as those women who had no children.

Women with secondary and higher education level were found 7.7 times more likely to practice modern FP methods than hose women with no education. Women with primary education were 3 times less likely to practice modern FP compared with those having secondary and higher education while they were found 2.6 times more likely to practice modern FP methods than those women with no education. This finding is consistent to the bivariate analysis of similar data analyzed by Agyei and Migdadde (32) in Uganda and Tawiah (30) in Ghana; and a regional study carried out by kebede (19) in Ethiopia. Tawaih (30) found that women with primary education were 1.4 times and those with higher education 3.4 times as likely to practice contraceptives as those women with no education, respectively. Agyei and Migdadde (32) found women with primary and secondary education were almost twice as likely to practice modern FP methods as those as those women with no education. Kebede (19) found that women with primary education were 4 times more likely to practice modern FP methods while those with secondary and higher education had a 9 times greater likelihood of contraceptive use.

In the wealth quintile analysis, it was found that women in highest wealth quintile group were 12 times more likely to practice modern FP methods than those women in lowest wealth quintile group. Those women in middle and forth wealth quintile group were found 3.2 and 4.3 times more likely to practice modern FP mthods than women in the lowest wealth quintile group, respectively. From the cohort study Garenne (31) has also been able to observe the association between the rise in wealth index and the practice of modern Fp methods in SSA. Kebede (19) in his study has found that government employed women had a 3.4 times more likelihood of modern contraceptive practice than housewives.

Results of the multivariate logistic regression analysis in the first model revealed that when adjusting for education level, urban residents were found to be 3.1 times more likely to practice modern FP were found to be 3.1 times more likely to practice modern FP methods compared with their counter parts residing in rural areas. Women with primary education were found to be 1.76 times more likely to practice modern FP methods than those who have had no education. In addition, those women with secondary and higher education were 2.5 times more likely to practice modern FP methods than those with no education.

In the univariable analysis the odds of modern FP methods Practice in urban residents was found to be 6.2. Adding education level to model one changed the value of urban residence coefficient from 1.82 to 1.13, this shows education can be a confounder in the relationship between the practice of modern FP methods and place of residence. Having adjusted for educational level in the multivariable model one, the odds of modern FP practice for urban residents changes to 3.1.this shows that the practice of modern FP methods is reduced having accounted for education level.

It is also observed that the odds of modern FP methods practice in women with primary level education as found to be 2.58 and for those with secondary and higher level 7.73 in the unavailable analysis compared to women with no education the addition of place of residence to model one changed the value of the coefficient from 0.946 to 0.563 for primary level education, and from 2.046 to 0.918 for secondary and above education level. This shows that place of residence can be a confounding factor in the relationship between the practice of modern FP methods and that of education level. Having adjusted for place of residence in the multivariable logistic regression model one, the odds of modern FP methods practice changes to 1.76 for primary level education, and to 2.51 for those with secondary and above education level. This shows the impact of education level is reduced having accounted for urban/rural status. These results show that both place of residence and education level can be confounders with each other.

Although limited in variables analyzed in the multivariate logistic regression, the finding from model one corroborates findings from previous studies that that observed the higher probability of contraceptive practice in married women with primary and higher level of education (Utomo eral (20); Guilkey et al (16); Tawiah (30); Kasian and Ayiemba (17); Garenne (31); Rahaman et al (13) However, this finding is in contrast with the findings of Ullah and charkoty (15) in Bangladesh and wasao (33) in Cameroon and Central Africa Republic which did not find the expected association and fertility decline with a rise in education level of married women.

Result from model two revealed that after adjusting for wealth quintile index, urban residents were found to be 2.5 times more likely to practice modern FP methods in contrast to their counterparts residing in rural areas.

Reference

1. UN department of social Affairs (UN DSA). Population Division world population policies 2003. New York: United nations 2004. Available at; http;//www.un.org/esa/population/publications/WPP2004/2004Highlights- findlrevised.pdf
2. Cleland JG., Ndugwa, R.P. & Zulu, E.M. Family Planning in sub-saharan Africa: progress or stagnation? Bull world health organ, 2011;89(2):137-43
3. Bongaarts J. Fertility transitions in developing countries: progress or stagnation, studies in Family Planning 2008; 39(2):105-110
4. Marco international inc. Trends in Demographic and reproductive health indicators in Ethiopia Calverton, Maryland, USA: 2007. Available at: http://www.measuredhs.com/pubs/pdf/TR4/TR4.pdf
5. Central Statistical Authority (CSA & ORC Macro). Ethiopia Demographic & Health Survey 2005. Addis Ababa, Ethiopia: CSA & ORC Macro; 2006. Available at: http://www.measuredhs.com/pubs/pdf/FR179/FR179%5B23June2011%5D.pdf
6. Singh S, Hussain R. Bankole A, Sedegh G, Wulf D. Abortion Worldwide: A decade of Uneven progress, New York: Guttmacher institute; 2009. Available at; http://www.guttmacher.org/pubs/Abortion-Worldwide.pdf
7. Singh S, Fetters T, Gebreselassie H, Abdella A, Gebrehiwot Y, Kumbi S, Audam S. The estimated incidence of abortion in Ethiopia, international perspectives on sexual and reproductive health, 2010;36(1):16-25.
8. Bongaarts J. the fertility-inhibiting effects of the intermediate fertility variables. Studies in family planning 1982 June-July; 13(6/7).
9. Bongaarts J. the proximate determinants of exceptionally high fertility. Population and development Review, 1987;13(1):133-139.
10. Curtis SL, Neitzel, K contraceptive knowledge, use and sources. Demographic and health surveys comparative studies No. 19. Calverton, MD: Marco International;1996.
11. Bawah, Ayaga A. and Wak, George 2005. Does Women's Relative income predict contraceptive Use in Ghana? An Assessment Using Bargaining Theory. Paper from international Union For the scientific study of population XXV international population conference Tours, France, July 18-23,2005.
12. Moronkola OA, Ojediran MM, Amosu A. Reproductive health knowledge, beliefs and determinants of contraceptives use among women attending family planning clinics in Ibadan, Nigeria. African Health Sciences. 2006,6:155-159.
13. Rahman M, Islam AZ, Islama MR. Rural-Urban Differentials of knowledge and practice of contraception in Bangladesh. Journal of Population and Social Studies, 2009;18(2):87-110.
14. Rutenberg N, Ayad M, Ochoa LH, Wilkinson M. 'knowledge and use of contraception'. Demographic and health surveys comparative studies No. 6. Columbia, Maryland. Instiute for resources development Macro International Inc.; 1991. Available At: http://pdf.usaid .gov/pdf-docs/PNABI940.pdf
15. Ullah MS, Charkorty N. The use of modern and traditional methods of fertility control in Bangladesh: A multivariate nalysis. Contraception, 1994,October; 50(4):363-372
16. Guilkey DK, Jayne S. Fertility Transition in Zimbabwe: determinanats of contraceptive use and method choice population Studies, 1997;51(2):173-189
17. Khasian SA, Ayiemba HO. Socio-Economic Correlates and determinants of fertility and contraceptive use in Kenya, 1993-2003. National Coordinating agency for population and development (NCAPD), Nariobi, Kenya; 2005. Available at:
18. Caldwell JC, Caldwell P. The cultural context of high fertility in sub-Saharan Africa. Population and development Review, 1987;13(3): 409-437.
19. Kebede Y. Contraceptive prevalence in Dembia District, northwest Ethiopia. Ethiopian Journal of health development; 2006;20(1):32.38 .
20. Utomo B, Alimoeso S, Park CB. Factors affecting the use and non use of contraception. Majalah Demografi Indones, 1983; 10(20): ii-19-48.
21. Chaco E. 'Women's use of contraception in rural India: a village-level study'. Health and place, 2001'7(3): 197-208.

22. Willis RJ. A new approach to the economic theory of fertility behavior. The journal of political economy, 1973; 81(2): S14-S64.
23. Barber JS, pearce LD, Chaudry I, Gurung S. Voluntary Association and fertility limitation . Soc. Force., 2002; 80(4): 1369-1401.
24. Bollen KA, Glanville JL, Stechklov G. Socio-Economic Status, Permanent Income, and fertility: A Latent-Variable Approach. Population Studies 2006, March; 6 (1): 15-34.
25. Choe, MK. & Tsuya, NO. (1991). Why Chinese Women Practice Contraception? The case of rural Jilin Province. Studies in Family Planning, 22(1):39-51.
26. Mason KO. The satus of women: A review of its relationships to fertility and mortality. New York:
27. The Rockefeller foundation; 1984. Katende C, Gupta N, bessinger R. Facility-Level Reproductive health interventions and contraceptive Use in Uganda. International Family Planning perspectives, 2003;29(3):130-137.
28. Delancey. V. Secioeconomic consequences of high fertility fro the family. In: Acsadi G T F, Acsadi G J, Bulatato R A (eds.) population Growth and reproduction in sub saharan Africa: Technical Analyses of Fertility and its consequences. The world Bank, Washington,
29. Caldwell JC. Mass education as determinant of the timing of fertility decline. Population and development Review 6:1980;225-55
30. Tawiah EO. Factors affecting contraceptive use in Ghana. J Biosoc Sci, 1997;29(2): 141-149.
31. Garenne MM. Fetfility chages in Sub-sharana Africa DHS comparative reports No.18. Calverton, Maryland, and USA: Macro International Inc., 2008.Availabele at: http://www.measuredhs.com/pubs/pdf/CR18/CR18.pdf (Accessed 16 June 2011).
32. Agyei WK, Migadde M. Demographic and sociocultural factors influencing contraceptive use in Uganda.
J Biosoc Sci. 1995; 27(1)47-60.
33. Wasao SW. A comparative analysis of the socioeconomic correlates of fertility in Cameroon and the central African Republic. Workshop on prospects for fertility decline in higher fertility countries. New Yorik, USA; 2001. Available at:
Hhttp://www.un.org/esa/population/publications/prospectsdecline/wasao.pdf
34. Gage AJ. Women's Socioeconomic position and contraceptive Behavior in Togo. Studies in Ffamily planning, 1995;26(5):264-277.
35. Haile Georgis F. Assessment of factors influencing the utilization of modern contraceptive methods among women in the reproductive Age Group in Angolela and Tera District, Norht Shewa Administrative Zone, Amhara National Regional State, Ethiopia; 2006. Available at: http://ejhd.uib.no/ejhd-3/145-151-EJHD-Vo120.pdf.

ORIGINAL ARTICLE

Status of family planning service integration for women in their reproductive age in chronic HIV Care clinics in Dessie town. Ethiopia

Wassye Yitagess, Ayele Belachew

Abstract

Background: integrating of family planning (FP) service in chronic HIV care clinics is an appropriate intervention to prevent newborns from acquiring HIV by enabling women who have the desire to prevent pregnancies.

Objective: To assess the level of FP service integration in chronic HIV care clinics in Dessie town, Ethiopia.

Methodology: A health facility based cross sectional study was conducted in 2011 in Dessie town, North East Ethiopia, among 401 HIV positive women in the reproductive age who attended chronic HIV care. Clinics. As well as program manager.

Result: three hundred ninety three (98%) HIV positive women who attended chronic HIV care had heard about one FP methods during the course of their care, of which 238 (60.5%) reported receiving counseling about FP. One hundred sixty eight (42.7%) of the respondents reported receiving condoms for FP purpose of which 108 (64.3%) were provided with condoms after being counseled for FP. Among respondents who ever heard about FP, 378 (96.2%) Supported the idea of having FP services integrated in the chronic HIV care. Care provider's work load, level of FP training lack of space and FP supplies were found to affect extent of service integration. Only 110 (27.9%) of respondents were provided with FP counseling and services during their chronic HIV care visits.

Conclusion: Although integration is supported by the health policy, and favored by clients and providers alike, the program environment and facility capacity (both human and logistic), were serious challenges for the integration of FP counseling and services in to the chronic HIV care (Ethiopia Journal of reproductive health, 2012,6(1):14-21).

Key words: family planning: integration; FP/HIV service integration; HIV

Introduction

Family planning (FP) is a powerful and cost effective HIV prevention approach, enabling HIV-infected women to prevent unintended pregnancies (1).integration i.e., provision of FP counseling and services in chronic HIV care clinics or referral to FP units after counseling is highly recommended in countries having generalized HIV epidemic (2,3). Studies in sub-Saharan Africa (SSA) suggest that the rates of unintended pregnancy among women living with HIV may be higher than in the general population (4), and 90% of children born from HIV infected mothers are from SSA (5).several evidences documented that integrating the two services can reduce stigma and discrimination, reduce unintended pregnancies, mother-to-child transmission of HIV, improving ease in talking about sex and fertility desires, improve care-seeking and improve adherence to anti-retroviral treatment (ART) (6). A study conducted in 2006 showed that voluntary FP service can aver nearly 30% or more HIV – positive births (7,8).

Integration of FP in the chronic HIV care is not only important for clients but also to the providers as well as the health system in such a way that integration reduces the overall cost of services, maximized productive use of available resources, strengthened supervisory and staff skills, and improved communication and problem-solving abilities to maintain quality services (8,9). However, FP service integration in chronic HIV care clinics may not be without challenges, providers may be overburdened, require providers training there may be shortage of contraceptives, increase client waiting time and may inconvenience for severely sick clients (8,10).

Current international policy and several international agencies have issued statements calling for stronger linkages between the two services (24). Several countries have tried to integrate FP into chronic HIV care services including Uganda, Nigeria and Ethiopia (18,22,24,26), and showed improvement in the health status of HIV-positive women (27).

On the other hand, reports documented that poorly paid health providers, vertical health system with week supervision, inadequate supplies, lack of strong monitoring and evaluation with lack of indicators and record keeping are the most common obstacles for integration (8,18,39-30

A facility based study in Uganda showed that 92-98% of clients on chronic HIV care were counseled about FP during their clinic visits and 81% used at least one FP method during the study period (13,14) and 30% of women reported that they had discussed about contraceptive methods other than condoms, but providers offered mostly condoms in Kenya while injectables or condoms were offered in Rwanda (15,16,29) .

Ethiopia belongs to one of the countries with generalized epidemic of HIV and 3rd lowest income and 11th highest estimated numbers of pregnant women living with HIV among 20 low and middle income countries (11), and the utilization of FP services is among the lowest in the world (12).

The approach in Ethiopia is not uniform in that FP is provided either at the chronic HIV care unit or through referral to a separate FP unit in the same health facility. A study conducted in Addis Ababa showed that all clients seeking HIV services are assessed for FP needs (18,19) while only 3.3% of patients in the chronic HIV care in selected health facilities in Hossana (20) and 30% in Bahir Dar (21) reported that they received FP service within the ART units. However, Various Factors were cited to promote or hinder FP services in chronic HIV care clinics including policy directions provider's attiudes and clients related factors.

Method

With specific purpose for assessing the status of integration of FP services in to the chronic HIV care program in order look into factors related to the integration of these services, a facility- based cross – sectional study was conducted. It was supplemented with in-depth interviews which was conducted among HIV positive women in the reproductive age enrolled in the chronic HIV care units of two hospitals in Dessie and Borumeda; and one health centre in Dessie in December 2010.

The sample size of 401 was calculated using a single population proportion formula at confidence level of 95% (two sided), marginal error of 5% and a 5% non-response rate considering the 53.5% of FP utilization among HIV positive women attending chronic HIV care in Addis Ababa. Study units were selected and interviewed from the source population all adult female HIV positive clients who were under follow up in the three selected health facilities' chronic HIV care unit during the study period.

Eligible study participants were interviewed consecutively throughout the working days and regular working hours until the sample size was achieved using an exit interview technique. The total sample divided proportionally to the three health facilities according to the chronic HIV care unit client load. Accordingly, 50 from Borumeda hospital, 81 from the health centre, and 270 from the Dessie referral hospital were allocated. Furthermore, nine ART service providers, two medical directors and two youth and maternal health officers from dessie town and south Wollo Zonal Health department were purposively selected and in-depth interviewed.

A structured questionnaire containing questions of socio-demographic characteristics, health condition use of FP service, willingness to FP service integration was prepared based on literature review and instruments used elsewhere to answer the objective of the study. The tool was initially prepared in English, Translated into Amharic, and pretested to ensure internal consistency and flow. Data were collected by six lay people working in HIV clinics (in order to avoid forced disclosure of HIV status).
To ensure data quality, two ART focal persons were assigned as supervisors to routinely follow and monitor the process and provide onsite corrections. Both data collectors and supervisors received a two-day training on the principles of ethics and the data collection tools by the principal investigator. Quantitative data were entered and cleaned by an experienced data clerk, and analyzed using Epi-info by the investigator, while qualitative information summarized manually and analyzed thematically. Dependant variable was the integration of FP services in chronic HIV care clinics (providing FP counseling and services within chronic HIV care unit by chronic care unit by chronic care providers during the same visit, or referred to FP unit of the same health facility after counseling in the chronic HIV care unit with referral form or prescription during the same operating hours), and the independent variables include basic socio-economic characteristics, sexual and reproductive health and duration of follow up.
Ethical approval was secured from the college of health sciences of the Addis Ababa university, and letter of cooperation was obtained from south wollo zone health department. Permission for data collection was obtained from relevant bodies of the three health facilities. Informed verbal consent was obtained from all study participants by telling the purpose of the study and the participants were telling the purpose of the study and the participants were reassured about the anonymity privacy and confidentiality of the information

Due respect was given jto the norms, values, beliefs and cultures of the clients throughout the data collection process.

Result
Characteristics of respondents:
Of the total 401 interviewed, 223 (55.6%) were on ART and the remaining 178 (44.4%) were on pre- ART schedule, 70% were between 21-35 years (mean=29.9 year, range 17-48 years), 46.1% were Muslims and Orthodox Christians, respectively. The majority 87% were Amahra, 55.4% currently married, 25.5% merchants and petty-traders, and 72.3% had at least one child (table 1).
The mean duration of follow up in the chronic HIV care was 2.5 years where 38.6% had their follow up for over two years. About 70% and 59% of them were sexually active during the past six and three months prior to the study, respectively.
FP counseling in the chronic HIV care clinics:
FP patients, 393 (98%) reported that they have heard about at least one kind of FP methods from these, 238 (60.5%) reported that they have been receiving FP counseling during their follow up in the chronic HIV care unit, among which 145(60.9%) were already on ART and the remaining 93 (39.1%)on pre-ART schedule. Of those counseled, majority 228 (95.8%) reported listening about condom, 21(8.9%) about pills/injectables and 5(3.5% about long term methods.
Clients who were on ART) and those who were sexually active within three month of data collection were more likely to enjoy benefit from the service with (OR=1.66, 95% CI (1.05-2.62) and (OR=5.99, 95%CI (3.36-10.7)) respectively however, duration of follow up and health status did not have significant association with use of integrated service.

FP method provision in the chronic HIV care clinics; of those who received FP counseling 168 (42.7%) provided with condom only in the chronic HIV Care unit, 108(64.3%) after being counseling about condom, 99(58.2%) of these were on ART schedule. Only five individuals were referred to FP units in the same health facilities, two after being counseling about FP.
Integrated FP service: of all participants, (27.9%) had enjoyed integrated service (i.e.) received both counseling and method provision even though they did not get other modern alternative FP methods other than condoms with the clinics.

Table 1: characteristics of respondents, Dessie, Ethiopia, 2010 (n=)

Characteristics	Frequency (n)	Percentage
Age group		
17-20	34	8.5
21-30	200	49.9
31-40	136	33.9
41-49	31	7.7
Religion		
Muslim	185	46.1
Orthodox Christians	181	45.1
Other Christians	35	8.7
Educational status		
Illiterate	98	24.4
Primary	111	27.7
Secondary & above	192	47.9
Ethnicity		
Amhara	350	87.3
Others	51	12.7
Marital status		
Married/;in relation ship	222	55.4
Divorced/Widowed	75	34.7
Never married	68	16.9
Non Married partners	36	9.0
Occupational status		
Unemployed/student	130	32.5
Merchants	102	25.5
Government/private employee	75	18.6
House wives/daily laborers/CSW	52	13.0
Farmer	42	10.2

Of which 71(64.5%) were on ART schedule whereas 82.7%, 14.5% and 2.7% were from Dessie referral hospital, Boru Meda hospital and Dessie health centre, respectively.

Single or widowed or divorced were less likely to enjoy integrated FP service as compared to married ones (AOR=0.27,95% CI=(0.16.48)IN contrast, age, religion, educational status and resident did not have significant association in terms of receiving integrated FP service (Table 2).

Table 2: integrated FP service use by selected characteristics of respondents, Dessie Ethiopia, 2010

Socio Demographic variables	FP services integration		COR(95%CI)AOR (95%CI)	AOR (95%CI)	P-value
	Yes	No			
Age groups					
30-49	40	125	0.75(0.48,1.18)	0.63(0.39,1.03)	00.0643
15-30	70	164	1.00	1.00	
Religion					
Muslim	48	137	0.87(0.56,1.35)	0.77(0.48,1.26)	0.3014
All Christian	62	154	1.00	1.00	
Marital Status					
Single/Widowed/ Divorced	21	122	0.33(0.19,0.56)	0.27(0.16,0.48)	0.000*
Married	89	169	1.00	1.00	
Educational Status					
Iliterate and elementary	60	149	1.14(0.85,2.34)	1.12(0.68,1.83)	0.6578
High school and above	50	142	1.00	1.00	
Resident					
Outside Dessie	44	103	1.22(0.78,1.91)	1.09(0.66,1.77)	0.7449
Dessie	66	188	1.00	1.00	

Client perspective: of those who have heard of FP, 130 (33.1%) supports and 248 (63.1%) strongly support FP service integration in chronic HIV care units respectively. Only four (1%) disagree with the notion of integration. Of those who support service integration 323 (85.4%) preferred to have FP service within the chronic HIV care unit instead of being referred to FP unit of the same facility.

Among integration supporters, 53% said that 'it reduces burden,' 32% claimed that 'it helps to initiate discussion with providers', 31% cited 'it reduces client's perceived stigma' and 21% cited 'it improves confidentiality' as reasons to support integration.

Of 378 respondents who responded to the question of preferred type of provider 215(57%) and 137 (36%) preferred nurses and physician, respectively, and 211 (55.8%)had no preference in terms of providers' age or sex.

Providers' perspective: all care providers support the integration of FP service in the chronic HIV care unit and according to them the approach improves quality of care, facilitates prevention of unintended pregnancy, reduces health seeking burden for the clients, decreases burdens of transportation and other expense, keeps privacy and reduces any form of stigma for people living with HIV/AIDS (PLWHAs.)

Providers also perceived that clients also need this integrated approach as they have been asked by many clients to have the FP methods in the chronic HIV care unit.

'Although I am busy with huge number of patient each day' I usually raise many issues regarding FP methods, some clients ask. Me about long term FP method. How ever, I used to provide them with condom and refer to FP units for other FP service' (ART providers from one hospital).

Majority of providers did not receive FP training in the last two years even during their basic and comprehensive HIV care ART training. Moreover most providers believed that condom was the best or only FP method for HIV positive women.

Providers reported that scarcity of working space, lack of training on FP, shortage of supplies, weak supervision and provider workloads have been the main bottle necks to provide integrated service.

'we are only few ART providers, I usually see more than 40 patients, sometimes up to 70 per day, ART units are just like supermarket, three clients are served at the same time in one room by three providers, no privacy of clients. We sometimes may not hear each other, sometimes, we simply refill the drug and…… I do not believe that we are providing quality service' (providers from hospital)

Although the pre-ART and ART follow up formats have a column containing methods of FP use, there were only few completed formats. Moreover, there was no reporting format, which contains elements of FP. FP was not included in the supervision checklist and they did not ask about FP integration in chronic HIV clinics during supervision.

'Periodically program managers come to us in ART clinics, they supervise us, ask about the number of pre ART, ART, pregnant women and PMTCT frequently , but no one asked about FP counseling and service provision or referral system in the clinics' (A provider from a health centre).

'we had quarterly catchment and biannual review meetings. We reported our performance in line with the report format which contains pre-ART,ART,PMTCTSTI, and PIHCT. FP counseling and service were not among activates to report and the meeting did not talk about it' (director of the health center).

Discussion

This study assessed the extent of FP Service integration in HIV chronic care clinics as well as willingness of clients towards integration of the service within the clinics in selected health facilities in Dessie, northeast Ethiopia. The proportion (60.5%) of women who received FP counseling in chronic HIV care clinics was found to be much lower compared to Uganda, which was 92% -98% (13,14), but better from that of kenya which was 55% (15). Condom was the predominant method of FP counseled in Uganda. As is also found in this study.

The 42.7% of condom users as FP in this study was much lower than that found in Uganda which was 81% (13,14) which also goes with the overall difference in the contraceptive use between the two countries. However, the proportion was better than documented in southern national nationalities and peoples region and Bahir dar 3.3% and 33%, respectively (20.21)

The referral practice (only five cases) was much lower than that of the Bahir Dar study, which reported 25% of chronic HIV care clients go FP service in the FP unit of the same facility (21).

The 27.9% level of integration was much lower compared to the national plans such as the Ethiopia national reproductive health strategy (32), call of the international agencies (24) and other HIV/AIDS related documents (9,31).

The low level of integrated service and condom as the principal FP method might not be due to lack of supporting national documents, rather may be due to providers workloads, lack of training (four-fifth of chronic care providers lack FP training), weak and inconsistent supervision of programmers which is consistent with a qualitative study from five African countries (31), and lack national integrated indicators, and not being supported by health management information system at national level, which is inconsistent with study in Nigeria (25). Moreover, lakc of supplies (no contraceptive logistics other than condom in the clinics), shortage of space for FP service provision, lack of educational material in the clinics and misconception of providers (condom the only recommended FP for PLHIV) were the possible causes for inhibiting FP service integration in chronic HIV care clinics. In general, chronic HIV care clinics were found to be poorly equipped to rendering FP service. Interestingly 96.2% of this respondents support service integration which was higher than previously documented 66% in Uganda (16), 34% of Addis Ababa (23) and 27% of Bahardar (21).

Likewise, the 85.4% of clients' preference to get the FP method provision within the chronic HIV care unit was higher from that of 88% Uganda (22), and Baharda (21).

Using mixed method of qualitative and quantitative techniques to solicit information from client as well as service providers is the strength of the study. However, the study has limitations in sample selection bias and limited sample size.

The level of FP integration in the chronic HIV care service was much lower; including the referral linkage from HIV chronic care clinics to FP method clients being counseled and provided with in the chronic care units.

Significant number of female HIV positive clients under chronic HIV care desire to get FP service in an integrated manner. Although the policy environment and providers attitude favors integration of FP into the chronic HIV care services, program level support and facility capacity was very low to bring integration a reality. Therefore, improving program level support in terms of supplies of FP utilities, increasing providers'

Acknowledgments

The authors acknowledge the Addis Ababa University, School of Public Health for the overall support, UNFPA for funding the study, and the Dessie town health office for facilitating the study.

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Reference

1. WHO and UNAIDS.AIDS epidemic update 2009
2. WHO, UNAIDS. Scaling up priority HIV/AIDS interventions towards universal access in the health sector, Geneva, 2009.
3. FMOH and HAPCO.AIDS in Ethiopia, Technical document for the 6th report, 2006
4. Helen J. AIDS in Africa Continent in Crisis Safaids; 2002.
5. Central statistical Agency. Ethiopian Demographic and Health survey 2005.
6. WHO. Medical Eligibility criteria for contraceptive use WHO press; 2009
7. Wosenyeleh Tamene, Mesganaw Fantahun. Fertility desire and family- planning demand among HIV-Positive women and men undergoing antiretroviral treatment in Addis Ababa, Ethiopia. African Journal of AIDS Research 2007. 6(3): 223-227
8. USAID. Family planning/HIV integration, Technical Guidance for USAID-supported Field programs 2003
9. FMOH and HAPCO. GUIDELINES FOR PREVENTION OF Mother-to-child transmission of HIV in Ethiopia. Addis Ababa,2007.
10. Family health international. NETWORK: INTEGRATING SERVICES; fp/hiv COLLABORATIVE SERIES. Usa 2004
11. KARIN R, MARISSA YA, MAME SGI, ER IN S, SARA S. Supporting the integration of family planning and HIV Service policy brief: USAID/Population reference Bureau;2009
12. Family health international and Engender Health. Contraception for women and clients with HIV: A toolkits. 2005
13. Jacob H, Rebecca B, David M, Rache K, Samuel M, Rose N, et al. reproductive intentions and Outcomes among women on antiretroviral therapy in Rural Uganda: A prospective Cohort study 2006;
14. Donna M, Carment C, Docras Ku, Conred O, Laura J, Gilbert M. Sexual Behavior, Fertility desires and unmet need for family planning among home-based care clients and caregivers in Kenya.2004.
15. Kiersten B, Johnson, Priscilla A, Shea O, Rutstena, Stan B. Fertility preference and contraception among women living with HIV: the basis for a joint action agenda I Zambia, Sawaziland, Zibmbabwe and Lesotho. 2009
16. Family health international. Family planning Needs in the Context of the HIV/AIDS epidemic: country assessment: kenyda 2004.
17. Delius A, Richard K, Johnson M, Karen H. Study of the integration of family planning and VCT/PMTCT/ ART programs in Uganda: USAID/POLICY project; 2005
18. Rachel S, Karen H, Carol S. Implementing Integrated Family planning and HIV/AIDS policies and programs: tools and resources.2005
19. Margot M, Kane B, Tayla C, SC M> integrating SRH and HIV/AIDS services: pathfinder international's experience synergizing health initiatives 2005
20. ACUQUIRE project. Evaluation of a family planning and antiretroviral therapy integration pilot in Mbale, Uganda 2008
21. Andia I, Angela K, Marissa M, David G, Neka E, Larry PD, R, et al. highly active antiretroviral therapy and increased use of contraceptives among HIV –positive women during expanding access to antiretroviral therapy in Mbarara, Uganda 2009
22. Yared A. Integrating family planning and VCT services in Ethiopia: experiences of health care provider DHS qualitative studies No. 14 2008
23. Yared M. Country analysis of family planning and HIV/AIDS; Ethiopia 2004
24. James D, Sheltona, Nomi F. Opportunities and pitfalls in integration of family planning an HIV prevention efforts in developing countries 2004
25. World health organization. Glion consultation and pitfalls in integration of family planning and HIV prevention efforts in developing countries 2004
26. Ogo C, Nzapfurundi OC, Mkke M, Dorka A, Christoph H, Integrating reproductive health and HIV/AIDS: indicators into the Nigerian health system – Building an evidence Base for Action 2010;
27. Getu G, Examination of the levels and determinant factors of fertility and contraceptive use in northwest Ethiopia: with special reference to the application of the Bongaart's Model, 2009.

28. Bradley H, Tsui A, Kidanu A, Gillespie D. HIV infection and contraceptive need among female Ethiopia voluntary HIV counseling and testing clients. AIDS Car; 2010
29. Bu' I Kc, Tine G, Nguyen TN, Vibeke R. Induced abortion among HIV-positive women in Quang Ninh and Hai Phong, Vietnam Tropical Medicine and international health 2007.
30. Bii S, Otieno NB, Siika A, Rotich J. Family planning and safer sex practices among HIV infected women receiving prevention of mother-to-child transmission services at Kitale District Hospital. Kenya 2008.
31. Policy on HIV/AIDS of the federal democratic republic of Ethiopia. Addis Ababa August, 1998.
32. Federal Ministry of Health (FMOH), National reproductive health strategy-2006-2015,2006.

ORGINIAL ARTICLE

Assessment of fertility desire and family planning utilization among people living with HIV and on antiretroviral treatment, Asella Hospital, Arsi Zone, Oromia Region

Legesse Tadesse, Ayele Belachew

Abstract

Background: individual's desire to have children and intention to use family planning method varies with demographic, socio economic, and health status, including human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS). However, concrete data is lacking on fertility desire and which of the factors affect utilization of family planning services.

Objective: to assess fertility desire and family planning utilization among people living with HIV and on antiretroviral therapy in Asella Hospital, Ethiopia,

Methods: A cross-sectional facility based study was conducted among 384 people who are living with HIV virus and on antiretroviral treatment. Face to interview using structured and pre-tested questionnaire and in-depth interview of health care providers were carried out.

Results: more male than female (AOR=0.01,95% CI 0 0.25) and individuals who have no or one child than those with two or more children (AOR=115,95% CI 3868.6) desired for children in the future. Single individuals had less desire than married ones (AOR=0.01, 95% CI 0 0.96) family planning utilization among people living with HIV was 47.7% before knowing their status while current users were 76.5% current family planning use was less among currently un married than married, and among those who were on antiretroviral treatment during the last one-two years (AOR=0.04, 95% CI 0 0.2.0.1) and (AOR=0.05, 95% CI 0 0.28.0.89) respectively.

Conclusion: the desire for chilkderen among people living with HIV and on antiretroviral treatment was high and varies by sex, marital status, and the number of children they already have. Family planning utilization among people on antiretroviral therapy was high and nearly doubled after they knew their HIV stfatus. Married and those who were one antiretroviral treatment for more than two years were more likely to use family planning method. The high fertility desire is a concern for the prevention of mother to child transmission counseling program (Ethiopian Journal of Reproductive health, 2012,6(1):22-29)

Key words: Desire, pregnancy, PLWHA, Asella

Introduction

Human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS) related illnesses remain one of the leading causes of death globally. By the end of the year 2008, 33.54 million people were living with HIV virus. The number of new infections has dropped by 17% since 2001, and deaths have declined by 10% over the past five years. Around 67% of all people living with the virus and 90% of children with HIV virus live in SSA. Hetero-sexual transmission remains the primary mode of HIV spread in Sub-Shara Africa (SSA), with extensive ongoing transmission to newborns and breastfed babies (1,2).

The desire to have children among those living with HIV has important implications for the transmission of HIV to sexual partner and newborns. However, proper prevention of mother to child transmission (PMTCT) program can help those positive individuals who desire for children to do so without sacrificing the health and wellbeing of their newborns, their partners and themselves.

Studies have shown that high proportion of people living with HIV have the desire to have children. Features such as age, ethnic8ty, marital status and the desire of the partner were factors that influence fertility desire (3,4,5,) and 6). In a study done in the United states of America among 1421 HIV positive men and women 28-29% of HIV positive men and women who were on medical care were found to desire more children in the future (4). Another study from cape town, south Africa documented that 57% of men and 45% of women who were living with HIV and on antiretroviral therapy (ART) desired for one child (6). A study in Addis Ababa, Ethiopia, found that among people who were living with HIV and were under ART and follow up care, 44.7% of women and 35.2% of men desire to have children in the future (3).

In developed countries, use of ART treatment drugs along with cesarean section and breast milk substitution decreased HIV transmission from positive mother to the child by about 2%making positive parenting a viable option (7,8). Ethiopia is one of the severely affected countries by HIV, with high rate of fertility, low coverage of FP and prevention of mother to child transmission service and limited evidence on the fertility desire of people living with HIV. Therefore, this study is believed to narrow the knowledge gap in this regard and inform policy decisions.

Methods

With specific purpose to determine the magnitude and factors affecting fertility desire and FP utilization, a cross-sectional survey supplemented with in-depth interview was conducted in the chronic HIV care unit of Asella hospital of Oromia region in December 2010. Aris zone has a total population of over 2.9 million (in 2010) with one referral hospital, two district hospitals, 60 health coverage is estimate at 89% (personal communication- Oromia regional health bureau).

Sample size was calculated with the assumption of 50% of people living with HIV desire children using a single population proportion formula at confidence level of 95% (two sided) and marginal error of 5% to get a sample size of 384. The source population were all people living with HIV care unit during the study period. A sample of 384 adult female and male individuals in reproductive age, who can communicate and those who attended the chronic HIV care unit during the study period were individually interviewed consecutively on exit from the care unit during the regular working ours until the sample size was achieved.

A structured pre-tested questionnaire which was used in similar studies in Addis Abba was adopted and translated into local language (Afaan Oromo) was applied to collect quantitative clinical nurses who were trained on the objective, benefit of the study, individual's right, informed consent and techniques for two days. To enrich the informant in-depth interviews were conducted by the principal researcher and three health workers. The service providers were working as voluntary counseling and testing, antiretroviral therapy provider and FP unit service provider. They used an open ended guide for conducted the in-depth interviews.

Data quality was ensured by a careful pre-testing of the questionnaire, proper training of data collectors, assigning a health officer form the ART unit/hospital to supervise the process and routine on-spot checking of completed questionnaires, and conducting evening session of data collection team to review qualitative data.

While the dependent variables were desire of fertility and contraceptive utilization the independent variable includes important socio-demographic characteristics, number of alive children, partner's HIV status, Duration since HIV was diagnosed and on antiretroviral therapy, level of CD4 count and perceived health, use of FP and intention to use FP.

Ethical approval was secured from the college of health science of the Addis Ababa University, and permission for data collection was obtained from the relevant body of the Assela Hospital

All issue of ethical consideration, participants autonomy, privacy and confidentiality were given due attention.

Result

A total 384 participants 256 (66.7%) were female, 188 (49%) were between 30 and 39 years of age 35, (9.1%) Illiterate, 215 (56%) were from Oromo ethnic group, 291 (75.8%) Orthodox Christian by religion and about half were currently married (Table 1)

Table 1: Socio –demographic characteristics of respondents (n=384)

Characteristics	Frequency (n)	Percentage
Sex		
Female	256	66.7
Male	128	33.3
Age group		
18-29	92	24.0
30-39	188	49.0
40-55	104	27.0
Religion		
Orthodox	291	75.8
Muslim	59	15.5
Other Christians	34	8.9
Education status		
Illiterate	35	9.1
Read/write	26	6.8
Primary	168	43.8
Secondary & above	155	40.4
Ethnicity		
Oromo	215	56.0
Amhara	142	37.0
Others (Tigre, Gurage)	27	7.0
Marital status		
Married/in relation ship	192	50.0
Divorced/Widowed	166	43.2
Never married	26	6.8
Occupational status		
Government/private employee	84	21.9
House wives	83	21.6
Daily laborers	93	24.2
Farmer	58	15.1
Merchants	54	14.1
Others (Derivers, Retired, etc)	12	3.1

The female maximum age was 49 while that of male was 55 years

There hundred twenty seven (85.2%) of women or spouse of the male participants gave to at least one birth of which 83.9% had at least one Live birth. Overall 131 (34.1%) of respondents (43.8% of males and 29.3% females) showed desire for children, of which 65(49.6%) and 57(43.5%) intended to have one child and two children, respectively,

Among the reason for the desire to replace self accounted the majority 112 (85.5%) while partner demand and to avoid stigma was reported by 31 (23.7%) and 2 (1.5%), respectively regarding timing, 61 need to have child when CD4 count is corrected **, 26.7when they feel healthy and 16.8% after two years (Table 2).

Table 2 fertility and desire for children

Characteristics	Frequency (n)	Percentage
You/spouse ever given birth to a child?(n=384)		
Yes	327	85.2
No	57	14.8
Number of live birth you/your spouse had? (n=384)		
None	62	16.1
1-2	162	42.2
> 3	160	41.7
Current no of children you have? (n=313)		
One	79	25.2
Two	86	27.5
Three	58	18.5
Four & more	90	28.7
Given birth you/spouse had after started ART (n=384)		
Yes	55	14.3
No	302	78.7
No response	27	7.03
Are you/your partner pregnant now (384)		
Yes	13	3.85
No	366	95.3
Do not know	5	1.30
Do you want having children in the future (n=384)		
Yes	131	34.1
No	253	65.9
No of children you want to have in future life (n=131)*		
One	65	49.6
Two & more	66	50.3
Reason for desire to have children in the future (n=131)		
My partner wants	31	23.6
To replace my heredity/myself	112	85.5
To avoid stigma/discrimination	2	1.53
To hide partner	2	1.53
Time preference when to have children (n=131)		
< 1 year	6	4.58
1 to 2 year	5	3.82
> 2 year	22	16.8
When I feel healthy	35	26.7
When CD4 corrected	80	61.1
As happens	2	1.53
Do not know	14	10.7

NB: one person can have more than one answer hence the sum is not equal to total number of respondents
*** CD4 was considered corrected when it is above 2000 cells per cubic milliliter for this study.

One hundred eight two (47.4%) ever used contraceptive before they knew their HIV status and 295 (76.5%) are currently using FP methods. Almost all current FP users disclosed their HIV status to the providers. Of those who are not current FP users 35 (39.3%) intended to use in the future while 52 (58.4%) do not intend. greater majority (68.6%) do not know the time
While 5(14.3%) wanted to do within six months. Reasons to use FP in the future include

Two hundred sixty five (69%) of respondents knew their HIV status for over two years. Two-hundred and twenty-two (57.8%) were on ART for a maximum of two years. Majority, 302 (78.6%) had CD4 count of > 200 cells per cub mm. almost all (97.9%) had perceived that their health status has improved.

Partner of 258 (67.2%) respondents were tested for HIV and 195 (75.6%) were HIV positive. 207

(53.9%) of participants were sexually active since nine months preceding the study of which 94.2% have used condom. Among condom users 171 (87.6%) used it regularly.

Health professional advice, for prevention of pregnancy, prevention of cross transmission and protection of HIV negative partner were mentioned by 52.3%, 90.3%, 74.36% and 17.4%, respectively. Only 143 of all respondents knew about emergency contraception (EC) Majority of the participants 377 (98.2%) discussed issues related sexually, child bearing and FP with care

Regarding current FP use, widowed or divorced and single individuals were less likely to Provider in a multivariate analysis female were found to have less fertility desire than male (AOR=0.01,95% CI= 0.001-096) (Table 3).
Those who participated in the discussion reported that they had no information about EC but after discussion on its benefit, showed desire
To use in the future.

currently use FP method than married counterparts (AOR= 0.04,95% CI=0.02-0.1) (AOR=0.05,) 95% CI= 0.02.0.18)
Respectively. Moreover, merchants were less likely to use than government or private employee (AOR=0.26, 95% CI=0.1-0.7). kiekewise, those individuals who received ART for less than two years were less likely to currently use FP methods (Table 4).

When we see the emergency contraception knowledge 85.7% have no awareness while 70.91% have desire to use in the future after getting information. (Table -5)

Table 3: Desire for children by selected characteristics

Characteristic	Fertility Desire of people living With HIV		COR(95% CI)	AOR(95% CI)
Sex	Yes	No	1.00	
Male	56(43.8%)	72(56.3%)	0.533 (0.34,0.83)	0.01(0.001-0.2)**
Female	75(29.3%)	181(70.7%)		
Marital Status				
Married	81(42.2%)	111(57.8%)	1.00	
Widowed/Divorced	33(19.9%)	133(80.1%)	0.34(0.211,0.548)	0.06(0,2.29)
Never Married	17(65.41)	9(34.6%)	2.588(1.098,6.100)	0.01(0,001.96)

Table 4: current family planning utilization by selected characteristics of respondent

Characteristic	Current family planning use		COR (95% CI)	AOR (95% CI)
	Yes	No		
Marital Status				
Married	185(96.4%)	7(3.6%)	1.00	
Widowed/Divorced	93(56%	73(44%)	0.048(0.021.0.109)	0.04(0.02,0.1)**
Never Married	17(65.4%)	9(34.6%)	0.071(0.024,0.216)	0.05(0.02,0.18)**
Religion				
Orthodox	220	72	1.00	
Muslim	48	11	1.408(0.69,2.858)	---
Other Christians	27	7	1.245(0.520,2.981)	---
Occupational Status				
Employee	71(84.5%)	13(15.5%)	1.00	
House wife	69(83.1%)	14(16.9%)	0.902(0.396,2.058)	0.39(0.14,1.13)
Daily laborer	61(65.6%)	32(34.4%)	0.349(0.168,0.724)*	0.55(0.24,1.26)
Farmers	49(84.5%)	9(15.5%)	0.997(0.395,2.513)	0.95(0.33,2.72)
Merchants	35(64.8%)	19(35.2%)	0.337(0.15,0.761)*	0.26(0.1,0.71)
Others	10(83.3%)	2(16.7%)	09.15(0.180,4.669)	1.54(0.27,8.74)
Duration On ART				
>2 Years	179(80.6%)	43(19.4%)	1.00	
<2 Years	116(71.6%)	46(28.4%)	0.606(0.376,0.976)*	0.5(0.28,0.89)**
Ethnic group				
Oromo	174(80.9%)	41(19.1%)	1.00	

Amhara	104(73.2%)	38(26.8%)	0.645(0.390,1.067)	0.86(0.47,1.58)
Others	17(63%)	10(37%)	0.401(0.1710.939)	0.75(0.37,1.52)

Table 5: characteristics of emergency contraception use of respondents

Knowledge about emergency contraception (n=384)	Number (n)	Percent (%)
Yes	55	14.30
No	329	85.70
Intention to use if Needed (n=55)		
Yes	39	70.91
No	16	29.09

Result of the in-depth interview.

The reason of desire for children includes replacing on self; culture, habit and tradition, taking over property, need brother/sister for child love, secure marriage, loneliness in the home, family pressure/interest, partner need, ensure old age care, gives esteem/hope value were described.

The reason for those not desiring children includes having enough number of children, no adequate income to grow up, fear of deterioration of maternal health and fear of

Having infected child. A man explained:

I need a child strongly. It gives me self esteem and value so, no loneliness. I proved PLWHA can get negative child that is why I desire strongly

After five years. I have a five and half year old negative child which I got after tested positive and happy now.(Male, 36 Years of age, married and has one child)

A woman said: 'I have a boy and a girl so I need a brother for my son and a sister for my daughter when my health is improved and CD4 is better and my wealth gets improved after I counseled my providers. My husband is negative and wants more children when I am fit enough.

My family and brothers are expecting me to have

After five years. I have a five and half year old negative child which I got after tested positive and happy now.(Male, 36 Years of age, married and has one child)

Discussion

Among the study group 47.7 percent reported to Have used FP before the diagnosis of HIV where as 76.5 percent found currently on use. The 34.1% fertility desire documented in this study is consistent with study conducted in the United state of America where 28-29% of HIV infected men and women receiving medication were found to desire children in the future (4), the 40.2% in Addis Ababa (3) 36.5% in Hosanna (9), 36.4 percent in south Wollo (10), and 33.9% in southern Nations and nationalities and peoples Region (11).The current study showed that more male has desire for future fertility than women (43.8% to 28.3%) similar observation was documented by a study conducted south Africa where 45% HIV positive women and 57% of HIV positive men where found to have desire and did not have plan to use FP (6).

Another study done in Nigeria showed that 68.4% HIV positive men and 53.8% of women who were on care desired children (12). The finding imply that women perceive the health danger associated with pregnancy and delivery

Similar association of fertility desire with marital status which was found in this study was aljso documented with the study done in the United States of America where among those who desire children 84% and among those not desired 64% were married (6). This can be due to the fact that marriage and intimate relationship is more likely to lead to ward having child.

This study found that more than 58 percent of those who have no or only one child had desire for children compared to those with more children. This might be due to the need for replacing oneself and partner need. In united states of America it was found 60% of people living with findings in Hosaina, Ethiopia (9). A study done in Addis Ababa showed that HIV positive men and womenh why had less that two children had desire for future fertility in their life time than who lees than two children had desire for future fertility in their life time than who have two or more (3). The in depth discussion also indicated that those who had no children had strong desire to conceive even with discordant partner. Majority of the people living with HIV and have larger family do not want to have more children while few still need children to have someone caring for them in their future life time.

The utilization of FP before HIV testing has improved after they get tested (47.4% to 76.3%). This finding was similar with that of the Addis Ababa study which was 48.9% before and 53.3% after HIV test (3). The ongoing FP users in current study was better and may be due to presently strength ended HIV service integration with FP and health extension workers (13).

Ninety eight percent of individuals admitted they discussed about sexuality, childbearing and FP of those ninety two perceived it as adequate however, more than half of them were sexually active of which 16.4% were not using condom always when they did. It was 27.7% in hosanna with no much difference (9). A cross-sectional study on ART care followers at public hospitals in Addis Ababa depicted 36.9% had a history of unprotected sex in the three months before the study (14). This contributes a lot for expansion of other sexually transmitted infection on top of existing HIV infection.

Qualitative data depicted that some women with HIV infection were subjected to involuntary sexual intercourse with some one they may know or not. Discussion with health providers showed that some HIV infected women became pregnant while they were reporting as being abstinent during their ART follow up…. The findings indicated that there was risk for themselves to be re-infected by different HIV and to infect non infected peoples though unprotected sexual contact.

Half of the study group had positive partners while the rest had negative, non tested or unknown result which makes dual protection method counseling very important, using a condom for disease prevention and another, more effective method for contraception with bare sex. Strong FP counseling and usage have implication in HIV prevention from either partner infection or transmission of the HIV from mother to child (15,16).

Most of the participants (85.7%) reported that they do not know about EC while high proportion of them admitted discussed on

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After having information about it (70.9%) majority of respondents showed intention to use EC, if provided; similar to findings in hosanna 90.65% and 66.67%, respectively (9). Strengthening counseling and providing it at the service pint may largely improve challenges rising from unwanted pregnancy and hence contribute to HIV expansion.

Considerable proportion of people living with HIV have desire to have a child/children in the future. Moreover, female than male, individuals how have two or more children than those with one or no child, and never married than currently married during were less likely to desire for child.

FP methods utilization of people living with HIV has almost doubled after knowledge of their HIV status and enrolment in to the HIV chronic care with ART. Married people living with HIV were more likely to currently use FP methods than those never married, widowed or divorced.

Knowledge of EC was extremely low among people living with HIV and proportion of respondents reported having counseling and discussion of EC with ART service providers was very low. Therefore, the counseling component of the antiretroviral therapy as well as the PMTCT services should consider the prevailing desire of people living with HIV for children and better inform on various FP methods including EC and dual protection method without risking their own, their child as well as their partner's life.

Reference

1. UNAIDS. WORLDWIDE AIDS and HIV statistics including deaths, now 2009.
2. WHO. Over view of HIV prevention WHO health report, Nov 24 2009
3. Wosenyelesh Tamene. Fertility desire and family planning demand among HIV positive men and women in follow up care in Addis Ababa antiretroviral treatment units. AA, Ethiopia 2006.
4. James LE Chen, Kathryn A Philips, David E Kanouse et al. fertility desire and intention of HIV positive men and women. Family planning perspectives, 2001; 33(4):144-152
5. O Gilivie Gina S. Fertility Intention of women of reproductive age living with HIV in British Columbia, Canada, 2007 vol. 21 100p .
6. Fertility intentions and reproductive health care needs of people living with HIV in cape town, south Africa; implications for integrating reproductive health and HIV care services, published online: 3 April 2009
7. Minkoff H and Santoro N. Ethical consideration in the treatment of in fertility in women with immunodeficiency virus infection. The new England journal OF MEDICINE, June 2000: 342(23):1748-1758.
8. Chen J. Philps K, Kanouse D, Collins R and Maul A. Fertility desire and intentions of HIV positive men and women family planning perspectives, 2001: 33 (4): 144-152&165.
9. Abebe M. Fetility Desire and family planning utilization among HIV positive people who are no ART, Hosanna, Ethiopia-2010
10. M. Getchew, F. Alemseged, M. Abera, A Deribew. Ethiopian Journal Of health development. 2010; 24(3): 214-220.
11. Ethiopian Public Health Association. Distribution of PLWHA attending ART service by fetility desire in SNNPR, extract No 5, Addis Ababa ETHIOPIA. 2008.
12. Olufemi T. Oladapo, Olusoji J. Daniel, Okanlawon L. Odusoga, And Oluwafayokemi Ayoola-Sotubo. Fertility Desire and HIV positive patients at a Suburaban Specialist center. J Natl Med Assoc 2005, 97 (12) 1672-1681.
13. Ministry of Health Arsi Zonal Health office activity report 2010 (Unpublished Report).
14. Ethiopia Public health association . Risky Sexual Practice and Related Factors among ART Atteders, Addis Ababa Ethiopia, 2010.
15. World health Organization. Strengthening Linkages between family and HIV: reproductive choices and family planning for people living with HIV, June 2007.
16. USAID addressing the family planning needs of HIV-positive PMTCT clients Baseline findings from an operations research study. Kenya, Nairobi, April 2005.

ORIGINAL ARTICLE

Willingness to use female condom by college students in Ethiopia: a neglected intervention

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Abstract

Background: Female Condoms (FC) are integral components of sexually transmitted infections (STI) and HIV/AIDS prevention there is a dearth of literature on the level of FC utilization in Ethiopia.

Objective: the objective of this study was to assess awareness, attitude and willingness to use FC among college female students in Harar town .

Methods: institution based cross-sectional study was conducted using quantitative and qualitative methods. A total of 844 female college students in Harara town, East Ethiopia Participated in the study in March, 2010. A multistage sampling technique was used to identify study subjects from the eight colleges. Data were collected by trained personnel using a pretested structured questionnaire.

Result: from the total of 844 students, 794 (94%) participated in the study. A total Of 663 (83.5%) students had heard of FC and only 3.3% of students had experience of using FC. Almost half of the students had positive attitude towards FC and 40.9% of students were willing to use FC. Students living outside the campus (OR=0.36,95% CI: 0.26, 0.50) were less likely to be willing to use FC. Students who had poor knowledge about modes of HIV transmission (OR=1.43%, 95% CI:1.04, 1.98), and students who had positive attitude towards FC (OR=5.99,95%: CI 4.31,, 8.34) were more likely to be willing to use FC. The qualitative findings revealed that FC was not widely available in most of the health institution and the students were not willing to use female condoms due to the rampant negative attitude.

Conclusion: Unavailability and negative attitude were the major barriers of FC utilization. The ministry of health and partner organizations should promote the benefit and use of FC in the prevention of HIV and other STI (Ethiopian Journal of reproductive health, 2012,6(1):30-36).

Introduction

In many regions of the world, new human immune deficiency virus (HIV) infections are heavily concentrated among young people (15-24 years of age.) among adults 15 years and older, young people accounted for 45% of new HIV infections and women account for nearly half of all people living with HIV. Sub-Saharan Africa (SSA) is more heavily affected by HIV than any other region of the world and two thirds (67%) of all adults and Children with HIV globally live in (SSA) and 60% of HIV infected adults are women (1).

In Ethiopia, 1.5% of adults age 15-49 are infected with HIV it is estimated that a large proportion of new infections occur in people aged 25 years of you. Similar to other SSA countries, transmission of HIV in Ethiopia is almost exclusively through heterosexual contact (2,3) Gender Inequity is an important driver of the HIV epidemic; 76% of the HIV- positive youth in sub-Sahara Africa are female (4). According to the 2011 Ethiopian demographic health survey (EDHS), HIV prevalence among women (1.9%) is twice higher than among men (1.0%)(2).

Currently, the methods available to curb the rapid spread of HIV are abstinence, faithfulness between uninfected partners and consistent condom use is important component of a comprehensive HIV/AIDS prevention program of youth (5).

Until recently, the only condom available to women in the world has been the male condom. A dual protection method that woman can initiate is the; female condom (FC) which offers an important alternative to male condoms (6). The FC is a contraceptive device developed in the 1980s as an alternative strategy aimed at ensuring a female controlled safe sex method. It protects pregnancy and sexually transmitted infections (STIs) including HIV infection (7). Interventional studies have shown that FC is an effective barrier against HIV and other STIs.

The contraceptive efficacy of the FC is also equivalent to that of other barrier methods for women (6). Therefore, this female initiated prevention is particularly important is SSA where prevalence of HIV infection is very high and the transmission is mainly through sexual contract (8).

However, despite the availability of FC and interventions to promote the use, studies have indicated low levels of FC use and acceptability among sexually active women aged 15 to 25 years (9). Therefore, it is critical to examine why FC use is not popular. In Ethiopia, only few studies have attempted to explore the determinants of acceptability and utilization of FC. The objective of the study was to assess the awareness , attitude and willingness to use FC among female college students.

Methods

A cross sectional study supplemented with qualitative methods was carried out in private and government colleges found in Harara town, East Ethiopia from March 1 to 10, 2010. In Harar town, there are three government and five private colleges. During the data collection period, a total of 7,276 students we enrolled in the regular programs of the college where female students accounted for 38% of the total students. Only one college had dormitories for some of the students while students in the other colleges live outside of the campuses.

For the quantitative study, the source population consists of all college female students attending their education during the study period. A total of 844 regular college female students were proposed to be included by assuming the proportion of students who were willing to use FC to be 50% with a 95% confidence level, 5% of margin of error and 10% of non-response rate. The required sample was allocated among eight colleges proportional to the size of the female students enrolled in their regular programs in the 2009/2010 academic year. Multi-stage sampling technique was used to select the study participants. First, representative departments from each college were selected using simple random sampling technique. Second, students in each department were selected using simple random sampling technique using their rosters.

For the in-depth interview, all FP service providers at delivery point in Harar town were the source population. From all the service providers, two government hospital, two health center, three private clinics and one Non Governmental organization (NGO) clinic (harar family Guidance Association of Ethiopia (FGAE) were selected by purposive sampling technique.

A total of 10 services providers (2 nurses in the hospitals, 2 nurses in the health centers, 3 nurses from the private clinics, 3 nurses from the NGOs in three service outlet areas) who were available during the data collection period were considered for interview.

A pre-tested self-administered structured questionnaire was used to collect the quantitative data. The questionnaire contains five parts which included students' socio-demographic status, sexual experience, knowledge and perception towards HIV/AIDS, awareness and practice towards FC and attitude and willingness to use FC. For the in-depth interview, semi structured interview guide was prepared and interviews were tape recorded.

Data were entered, cleaned and analyzed using SPSS statistical version 16.0 Bivariate and stepwise multivariate logistic regressions were done to identify predictors of willingness to use FC. Variables which showed significant association ($P<0.05$) in the bivariate analysis were included in the final stepwise logistic regression model.

For the qualitative data, after the interview data was transcribed word by word into the local language and then translated into English language. Then similar responses were grouped and summarized based on the main dimensions of the concept.

The study obtained ethical clearance from Jimma university. Permission papers were also obtained from different concerned authorities and offices in Hara. Similarly written and verbal informed consent was obtained from each study subjects. The confidentiality of study subjects response was assured.

Results

Socio-demographic status of the students:
A total of 794 students participated in the study making the response rate of 94% the age of the students ranged from 16 to 31 years and the mean age (SD) was 20.2+2.07 years. Of the total students, 327 (41.2%) were in the age range of 15-19 years and 419 (52.8%) were in the age range of 20-24 years. In these two age categories, the percentage of willing to use FC were 120 (36.7%) and 176 (42.0%) respectively. More than half of the students 415(52.3%) were Orthodox Christian followed by Muslim 259 (32.6%).

Majority of the students, 726 (91.9%), were single and the rest 64 (8.1%) were married. From the single individuals, 303 (41.5%) were willing to use FC. Only 41 (5.1%) of the total had more than one child and 23 (56.1%) of these students were willing to use FC. Of the total students, 481 (60.6%) were attending health fields. Of the total students who have been studying health fields, 212 (44.1%) were willing to use FC. There was no association between years of study and willingness to use FC (P=0.42) (Table 1).

Sexual characteristics of students:

Two hundred eighty eight (36.3%) students had an experience of sexual partner in the past 12 month. Most of the students, who had sexual experience, 197 (68.4%), used condom during sexual intercourse. Among those who used condom, 171(86.8%) used male condom while only 3(1.5%) used FC.

A total of 23 (11.7%) students used both types of condoms. Of those who used condom in the past one year, 97(33.7%) used condom consistently; 49 (17%) used most of the time; and 51(17.7%) used sometimes.

Knowledge and perception of students towards HIV/AIDS:

All students were aware of HIV/AIDS a total of 378(47.6%) students had good knowledge about the mode of HIV transmission. One the other hand, 416 (52.8%) of students had good knowledge about HIV prevention methods such as abstinence, use of condom and faithfulness among students who had good knowledge about mode of the transmission of HIV, 134 (35.4%) were willing to use FC. On the other hand, of the total students who had good knowledge on HIV use FC. Students were asked about heir chance of acquiring HIV. A total 391(49.2%) of students perceived that they had little chance of acquiring HIV. Of the students who do not consider themselves at risk of acquiring HIV, 139 (35.5%) were willing to use FC.

Table 1: Socio –demographic characteristics of respondents (n=384)

Variables	Willingness to use FC Yes number (%)	Number (%)	Chi-square	P-value
Age			9.75	0.008
15-19	120(36.7)	207(63.3)		
20-24	176(42.0)	243(58.0)		
25+	20(64.5)	11(35.5)		
Religion			1.71	0.79
Orthodox	164(39.5)	251(60.5)		
Muslim	113(43.6)	146(56.4)		
Catholic	9(36.0)	16(64.0)		
Protestant	35(42.4)	48(57.8)		
Others	4(33.3)	8(66.7)		
Ethnicity			1.18	0.88
Oromo	138(40.4)	204(59.6)		
Amahra	136(41.5)	192(58.5)		
Gurage	24(41.4)	34(58.6)		
Tigre	16(47.1)	18(52.9)		
Others	11(34.4)	21(65.6)		
Marital status			1.23	0.27
Married	22(34.4)	42(65.6)		
Single	303(41.5)	427(58.5)		
Number of Children			4.11	0.04
None	302(40.1)	451(59.9)		
One+	23(56.1)	18(43.9)		
Area of residence			7.58	0.006
In campus	198(67.9)	9(32.1)		
Outside the campus	306(39.9)	460(60.1)		
Field Of study			4.66	0.03
Health fields	212(44.1)	269(55.99)		
Non health fields	113(36.1)	200(63.9)		
Year of study			0.66	0.42
Year 1	112(43.9)	143(56.1)		
Year 2	1114(38.8)	180(61.2)		
Year 3	99(40.4)	146(59.1)		

A total of 18(2.3%) perceived that they were at higher risk of acquiring HIV. Only 70 (88%) of students reported that their partner had another sexual partner. Of the students whose partners had another sexual partner, 46(65.7%) were willing to use FC.

Awareness and practice of female condom:

Majority of students, 663 (83.5%), had heard about the FC. F these, the main sources of information were health workers, 348(52.5%)followed by HIV/AIDS clubs 271(40.9%). Only 26(3.3%) of students had experience of using FC. Most, 19(73.1%), of those who used FC had approval from their sexual partners to use FC. The main reason for those who are not using FC were abstaining from sex till now, 506(65.9%), followed by inaccessibility of FC in the nearby shops or health facilities, 2008(27.1%).

Attitude and willingness to use female condom

Nine items were used to evaluate students attitude towards FC and the total item mean score was used to categorized students as having positive (above the mean) and negative attitude

About a total of 4077(51.3%) students had positive attitude towards FC while 387(48.7%) had negative attitude. A total of 325(40.9%) of the total were willing to use FC. Out of those students who had an intention to use FC, 184(56.6%) had a plan to use it with regular sexual partner, 94(28.9%) with occasional sexual partner and the rest 47(14.5%) had a plan to use with both types of partners. the main reason given by those students who weren't willing to use FC for unwillingness preferred to abstain from sex, 250(53.3%), preferred to be faithful to one partner, 133(28.4%), and religious reasons 71(15.1%).

Among several variables, area of residence, experience of sexual intercourse, knowledge about the methods of transmission of HIV and attitude toward FC were found to be significant predictors for willingness to use FC. Students who lived outside the campus (OR=0.3=8, (95% CI: 0.15, 0.93) and students who had no experience of FC (OR=0.36, (95% CI: 0.26, 0.50)), were less likely to be willing to use FC.

Table 1: Socio –demographic characteristics of respondents (n=384)

Variables	Willingness to use female condom Yes Number (%)	No Number (%)	Crude OR (95% CI)	Adjusted OR (95% CI)
Area of residence				
In Campus	19(67.9)	9(32.1)	1	1
Out of Campus	306(39.9)	460(60.1)	0.31(0.14,0.71)	0.38(0.15,0.93)
Ever had sexual intercourse				
Orthodox	166(57.6)	122(42.4)	1	1
Muslim	159(31.4)	347(68.6)	0.34(0.25,0.45)	0.36(0.26,0.50)
Modes of transmission of HIV/AIDS				
Good Knowledge	134(35.4)	244(64.6)	1	1
Poor knowledge	191(45.9)	225(54.1)	1.54(1.16,2.06)	1.43(1.04,1.98)
Attitude towards FC				
Positive Attitude	248(60.9)	159(39.1)	6.28(4.56,8.64)	5.99(4.31,8.34)
Negative Attitude	77(19.9)	310(80.1)	1	1

Students who had poor knowledge about HIV/AIDs (OR=1.43, (95% CI: 1.04, 1.98)) and students who had positive attitude towards FC (OR=5.99, (95% CI:4.31,8.34))were more likely to be willing to use FC than their counterparts (Tables 2).

Service related barriers of female condom utilization:

To assess service related barriers of FC utilization was related to unavailability of condoms. The major reasons of FC non-availability included lack of supply by the government or other organizations and low acceptance by the community as;

'we don't sell FC in our pharmacy. Even if it is available on market from DKT Ethiopian, it was not acceptable by the community'

Only Harar family Guidance association of Ethiopia (FGA) had been providing FC freely for the past three years through the three outlets of the clinics and per educators. Mostly youths, especially those who were not married and prostitutes were users of FC. The main reason of FC use in the FGAE clinic was to prevent the transmission of HIV. Most of the users were comfortable with the FC and they continued to use the service.

Providers' knowledge and attitude towards female condom:

Most of the providers didn't take any in-service training concerning FC except those who were working in the NGO clinics. Majority of the service providers except those who were working in the NGO clinics perceived the FC as more Disadvantageous/useless and technically difficult.

A service Provider from NGO clinic said, 'FC in Ethiopian culture is not easily acceptable and adopted it takes time for the health workers and the community to be familiar with it.'

Majority of institutions didn't give detail information about FC for their clients. Service providers only give information regarding the availability/existence of FC. One service provider explained the lack of client-provider interaction about FC as; 'for clients coming to this institution, I gave the information about the availability of FC only because I have still doubt to teach about FC in detail because my knowledge I limited.'

Awareness creation activities about FC at the community was also limited except in the FGAE youth center. Other institutions had no adequate teaching aid materials about he FC. Most of the limited awareness creation activities, lack of advertisement in mass media, cultural and religious reasons, absence of clear policy an less integration with other services and limited supply and provision were some of the barriers that affect the acceptability and utilization of FC in the community.

Discussion

This study explored several factors concerning the willingness to use FC among college students in Harara, Probably in Ethiopia for the first time this is despite the fact that a total of 83.5% of students had heard about FC, which is consistent with other studies in Italy and Nigera (10,11).

The use of FC was 3.3%, which is lower than a study done in Nigeria (11) absence of information education and communication (IEC) materials, less advertisement by media, and limited availability could be some of the reasons for the low utilization of FC in the study area. About 73.1% of sexual partners of FC users were approved to use FC which is higher than the finding by Okunlala et al in Nigeria (11). This could be due to cultural and religious difference of the two study population. Sexual experience had significant association with willingness to use FC than those students who had no experience. Students who abstained from sexual practices might have a lower perceived risk of contracting HIV and which probably contributed for a low utilization of FC.

Students who had poor knowledge about HIV/AIDS were more likely to be willing to use FC than those who had good knowledge. This could be due to lack of knowledge and negative perception about FC.

Students who had good knowledge about HIV/AIDS might have low risk perception and they might as well ignore the prevention methods such as FC. In this study, attitude towards FC was the most significant predictor of willingness to use FC, which was supported by the qualitative findings.

To our best knowledge, although the study was the first of use kind in Ethiopia to explore the willingness to use FC and its barriers, it had some limitation. First, the study instrument was not done and there might be information bias. Thirdly, during sample size determination finite population formula was not used even the source population was less than 10000.

In conclusion, unavailability and negative attitude seems to be the major barriers for the utilization of FC. We recommend to the government and NGOs. Working one on reproductive health to avail FC in the private and public sectors. The health professionals and other partners need to have collective effort to increase awareness and positive attitude towards FC among the public and service providers.

Acknowledgment

The authors acknowledge EPHA-CDC project for sponsoring this research. The authors also appreciate Harari health Bureau, Hara family Guidance Association of Ethiopia (FGAE) and the study participants for their cooperation in providing the necessary information.

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References

1. UNAIDS: report on the global AIDS epidemic. UNAIDS;2008
2. Central statistics agency, Ethiopia and ICF international: Ethiopia demographic and health survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: central statistics Agency and ICF international; 2012.
3. Federal Ministry of health (FMoH), Ethiopia: National HIV/AIDS prevention and control office. AIDS in Ethiopia 6th ed. Addis Ababa: federal Ministry of Health, Ethiopia.2005
4. Kebede D, Alem A, Mitike G, Enquselassie F, Berhane F, Abebe Y et al: Khat And alcohol use and risky sex behavior among in school and out of school youth in Ethiopia. BMC public health 2005, 5(109).
5. Samuel M: social and behavioral studies on HIV/AIDS among Ethiopia youth paper presented at HIX international conference on AIDS; Barcelona, Spain;2005.
6. Issayas S, Gebrekidan A: Acceptability of the Female condom in Eritrea. Eritrea Ministry of health;1999.
7. Hoffman S, Gebrekidan A: Acceptability of the female condom. International family planning perspectives 2004, 30:139-145.
8. Deniaud F: current Status of the female condom in Africa. Sante 1997, 7(6):405-415.
9. Dense: S:the acceptability of the female condom among low income African American Women. Journal of the national Medical Association 1992, 85(5):341-347.
10. Spizzichino L, Pedone G, Gattari P, Maria A, Gallo P, Valli R: the female condom: Knowldege, Attitude and willingness to use, the first Italian study. Ann IST super sanita 2007, 43(4):419.424.
11. Okunlola MA, Morhason-Bello IO, Owonikoko KM, Adekunle AO: Female condom awareness, use and concerens among Nigerian female undergraduates. Journal of Obstertrics and Gynecology 2006,26(4):353-356.

ORIGINAL ARTICLE

Knowledge, attitude and utilization of emergency contraception: a cross sectional study among female university and college student

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Abstract

Introduction: Although emergency contraception is an essential reproductive health option, it remains vastly underutilized.

Objectives: the objective of this study was to assess the level of knowledge, attitude and utilization of emergency contraception (EC) and its associated factors.

Methods: cross sectional survey was conducted on female university and college students in Araba miinch town from November 15-30,2009. Selfe- administered questioners were employed to collect pertinent data.

Results: from a total of 791 respondents, 66.2% of them had reported that they have ever heard about emergency contraception and 60.1% of them reported incorrect methods like Depo-Provera and Norplant and 26% of them don't know the exact time when EC should be taken. For most of the respondents the source of information on EC was peer discussion, 185 (35.%) followed by from health professional teaching, 101(19.3%) from teachers 96(183%)and from mass media 66 (12.6%) out of the 791 respondents only 76 (96.%)of them have practiced EC and majority of them 65(85.5%) used pills. Only 8 (10.5 %) of those who used EC know the correct methods use following unprotected sex. Most of the respondents 530 (67%) are willing to use EC and for majority of them 494(93.2%)the reason motioned was preference to use EC than getting pregnancy.

Conclusion: knowledge and utilization of EC was low, but attitude on EC was relatively high. Pills have been used widely by most of the respondents as and EC method (Ethiopia Journal of reproductive health, 2012,6(1):37-45).

Introduction

Emergency contraception (EC) refers to contraceptive method that may be used in the first few days after unprotected intercourse to prevent pregnancy. Although EC is an essential reproductive health option, it remains vastly underused (1).

The most common method of EC involves taking and increased dose of oral contraceptive pills as soon as possible- optimally, within 72 hours (3 days)-after unprotected sex. A second dose it taken 12 hours later. Insertion of an intrauterine device within 5 days of unprotected sex is another, less frequently used, method of EC. Although intrauterine devices are effective, and their use is an appropriate method for many women, pills are easier to administer and may be taken by a wider user group (1).

EC is a safe and effective post coital contraceptive method that can reduce the risk of an unintended pregnancy after unprotected sexual intercourse or contraceptive failure by at least 75% to 89% if taken within 72 hours of sexual intercourse. Every year, unintended pregnancies lead to at least 20 million unsafe abortions, resulting in the death of some 80,000 women. There is low utilization of EC, while awareness is relatively high (2-3).

Recent research suggests that combined EC pills are moderately effective even if started between the third and fifth day (up to 120 hours) after unprotected sexual intercourse or contraceptive failure, with effectiveness rates ranging from 72% to 87% in one study. It may operate by inhibiting ovulation or preventing the implantation of fertilized egg; however, it does not interfere with an established pregnancy (4-5) using EC as a backup method can contribute to reduce unwanted pregnancy secondary to method failure, contraception nonuse and also rape (6).

Studies investigating knowledge, attitude and practice (KAP) on EC are limited in Ethiopia, and researches available focused on only university students it is also very important to asses KAP of EC on college students since most college students are from rural areas, the chance of getting information on their sexual and reproductive health needs is limited. Living out side campus and without parents supervision may worsens the exposure to unintended sex and unwanted pregnancy.

Therefore the aim of this study was to evaluate the extent of the KAP of EC among college and university students in Araba Minch town with the view of identifying a plausible strategy for reducing unwanted pregnancies and the associated morbidity and mortality. Hopefully, this study provides baseline data to assist policy makers in developing appropriate evidence-based strategies to promote the use of EC in Ethiopia.

Methods

Institution based cross sectional survey was conducted on female Arba Minch university and six other colleges students found in Arba Minch town namely Araba Minch Training college, Araba Minch health science college, Araba Minch TVET, Omo Teachers Training college, Paramed health science college and Zuma Business and health science college from November 15-30, 2009. The sample size was determined by single population proportion formula by considering proportion of female students having positive attitude of EC to be 51.1% (from a similar study conducted in Assela town college students). Accordingly, a total of 844 respondents were included in the study.

Self administered questionnaire was used to collect the data. The questionnaire had three parts: part one is on socio demographic characteristics; part two on sexual and reproductive history; and the last part on knowledge, attitude and utilization of EC. Students were considered knowledgeable if they correctly respond three or more questions related to EC out of six or else they were considered to have poor knowledge. Intentions of using or recommending others were considered as a positive attitude and having no intention to use has been taken as a negative attitude. The data was coded, sorted and entered in to Epi info version 3.5.1.and then it was cleaned and transferred to SPSS version 16 computer software for analysis.

Ethical clearance was obtained from Araba Minch university Ethical Review committee before the study was conducted. The letter was given to all concerned bodies and permissions were secured at all levels. Purpose of the study was told to each participant and verbal consent was obtained from each of them.

Result

Socio demographic characteristics of the respondents

At0tal of 844 female respondents were enrolled to participate in this study. Among these 791 of them were included making the response rate of 93.7% majority of the respondents, 612 (77.4%) were between the age group of 14-20 with mean age of 19.75+1.8 years.

Concerning ethnic group, moist of the respondents were Gamo 212(26.8%), followed by Amahra 192 (24.3%). A great number of the respondents, 432 (54.6%), were Orthodox Christians, followed by protestant 290 (36.7%). Majority 710 (89.8%) of the respondents were single. Socio-demographics of the respondents is depicted in Table 1.

Table 1: socio demographic characteristic of university and college Female students in Araba Minch Town, November, 2009

Characteristics	No (%)
Age (n=791)	
14-20	612(77.4)
21-25	172(21.7)
26-32	7(0.9)
Religion (n=791)	
Orthodox	432(54.6)
Protestant	290(36.7)
Others	69(8.7)
Marital status (n=791)	
Never married	710(89.8)
Ever Married	81(10.2)
Place of residence (n=791)	
Inside campus	395(49.9)
Outside campus	396(50.1)
Class year	
Year I	316(39.9)
Year II	285(36)
Year III & above	190(24.02)

Sexual and reproductive health characteristic of the respondents

The age of menarche for more than half of the respondents,439 (55.5%) was between the age range of 15-18 years with mean age of menarche 14.5+1.5 years.

From those who had an experience of sexual intercourse, 138 (73.4%) were with their consent and the rest 50 (26.6%) were forced. Among those who were forced to have sexual intercourse, 19(38%) were forced by their classmate, friend or husband (Table2).

Table 2 sexual and reproductive health characteristics of university and college Female students in Arab Minch Town, November, 2009.

Characteristics	No (%)
Age of menarche (n=971)	
9-14	352(44.5)
15-19	439(55.5)
Ever had sex (n=971)	
Yes	188(23.8))
No	603(76.2)
Was sex by consent?(n=791)	
Yes	138(73.4)
No	50(26.6)
Who forced you to have sex?(n=50)	
Class mate (friend/husband)	19(38)
No response	13(26)
Relative	10(20)
Teacher	4(8)
Unknown Person	4(8)
Have you had pregnancy after Sex? (n=50)	
Yes	16(32)
No	31(62)
No response	3(6)

Knowledge, attitude and practice on contraceptive methods of the respondent

Six hundred seventy five (85.3%) had ever heard about modern contraceptive methods of which 571 (72.2%) and 511(64.6%) know Depo-Provera and condom, respectively. Regarding the source of information on contraceptive methods, 210(31.1%) got from health professional followed by their teachers in the class 168 (24.9%).

With regard to whether the respondents ever used modern contraceptive methods or not, 544 (80.56%) reported that they have not used these methods while the rest 131 (19.41%) reported that they have an experience of using these methods. Among those who used modern contraceptive methods, 45 (34.4%) used Depo-Provera (Table 3).

Table 3: KAP on contraceptive methods of University and college female students in Araba Minch Town, November,2009

Characteristics	No (%)
Ever heard contraceptive methods (n=791):	
Yes	675(85.3)
No	116(14.7)
Type of contraceptive heard (*multiple response)	
(n=675)	
Depo-Provera	571(84.6)
Condom	511(75.7)
Pills	473(70.7)
Loop	399(59.1)
Norplant	277(41.03)
Others	17(2.52)
No response	108(16)
Source of information about contraceptive	
(n=675)	210(31.1)
Health professionals	168(24.9)
Teacher	19(12.3)
Mass Media	58(8.6)
School Clubs	33(4.9)
Family	83(2.8)
Peer Discussion	104(15.9)
Others	
Ever used contraceptive (n-675)	131(19.4)
Yes	544(80.6)
No	
If yes, which contraceptive you used? (n=131)	45(34.4)
Depo-Provera	43(32.8)
Pills	43(32.8)
Others	
Ever had unwanted pregnancy (n=791)	33(4.2)
Yes	758(95.8)
No	
Ever had unwanted pregnancy while using	
contraceptives? (n=131)	22(16.8)
Yes	109(83.2)
No	

Knowledge of emergency contraception

From the respondents, 524(66.2%) of them reported that they have ever heard about EC. From those who heard about EC, majority of them 425 (81.1%) reported pills and 315(60.1%) reported incorrect methods like Depo-Provera and Norplant.

With regard to the time to take EC, 269(51.3%) reported following unprotected sex and 164(31.3%) as a regular contraceptive method and after unwanted pregnancy (Table 4).

Table 4: ***KAP on contraceptive methods of University and college Female students in Araba Minch Town, November, 2009***

Characteristics	No (%)
Ever heard about (n=791):	
Yes	524(66.2)
No	267(33.8)
EC Methods reported as heard. Multiple responses? (n=524)	
Pills	425(81.1)
Loop	148(28.24)
Others	315(60.1)
Source of information about contraceptive (n=675)	
Peer Discussion	185(35.3)
Health professionals	101(19.3)
Teacher	96(18.3)
Mass Media	66(12.6)
School clubs	49(5.15)
Others	27(9.35)
When EC should be taken n=524	
Correct/following unprotected sex	91(51.3)
Incorrect	164(31.3)
As regular contraceptive, before sex	269(17.4)
Ever used EC? (n=791)	
Yes	76(9.6)
No	715(90.4)
Which EC you used? (n=76)	
Pills IUCD	65(85.5)
IUCD	3(3.9)
Don't' know/remember	3(3.9)
No response	5(6.6)
How did you use the method? (n=76)	
Correct	8(10.5)
Not correct	14(38.2)
Don't remember	25(32.9)
No response	29(18.4)
Willing to use EC? (n=791)	
Yes	530(67)
No	88(21.9)
No response	173(11.1)
Willing to use EC, why? N=530	
I prefer to use EC than pregnancy	494(93.2)
Other	36(6.8)
Not willing to use EC, why? N=173	
Religious prohibition	100(57.8)
Fear or rumor	36(20.8)
Recommend others to use EC? N=791	
Yes	445(56.3)
No	167(21.1)
Don't Know	98(12.4)
No response	81(10.2)
Unplanned sex is problem of girls (n=791)	
Yes	340(43)
No	278(35.1)
Don't Know	108(8.2)
No response	65(13.7)
Unplanned pregnancy cause problem (n=791)	
Yes	505(63.8)
No	153(19.3)
Don't Know	78(9.9)
No response	55(7)

Like after unwanted pregnancy

Practice of emergency contraception

From a total of 791 resp0ndetns, only 76(9.6%) of them have used ECs. Of those who used, majority 65(85.5%) used dedicated EC pills. Only 8(10.5%) know correctly how ECs. Are used following unprotected sex (Table 4).

Attitude about emergency contraception

from the respondents, 530 (67%) of them were willing to use EC. The major reason mentioned among those respondents who were not willing to use EC was religious prohibition 100 (57.8%). (Table 4)

Factors associated with knowledge, attitude and practice of emergency contraception

Cross tabulation and binary logistic regression were employed to assess the association between different socio-demographic variables and KAP of EC. Students in Amahra ethnic group were more knowledgeable on EC than Gamo and other ethnic groups (COR=2.2;95% CI, 1.16-4.34). Respondents of age group 21-32 have more positive attitude toward EC than those respondents of age 14-20, (COR=1.9; 95% CI, 1.11-3.36).

Those respondents who were married practiced EC 6-fold more often than those never married (COR=6.2; 95% CI, 3.61-10.79). respondents who had one or more than two children practiced EC more than those who had no child, (COR=6.2; 95% CI, 2.94-13.14) for one child and (COR=6.4; 95% CI,2.46-16.72) for two and above child. Respondents who live with their husband/friend used EC six times than those who live with their family (COIR=6.1; 95% CI,2.12-17.30) respondents of age group 21-32 practiced EC around for times than those respondents of age 14-20(AOR=4.775; 95% CI, 1.969-11.5) respondents having Orthodox religion have more positive attitude toward EC than protestant and other followers (AOR=3.607; 95% CI,1.669-7.797). year three students also have more positive attitude toward EC than their juniors (AOR= 5.168; 95% CI, 2.240-11.921) (Table 5).

Table 5: socio-demographic factors associated with KAP of emergency contraception among university and college female students In Araba Minch town, November, 2009

Characteristics	Knowledge of EC Crude OR (95% CI)	Adjusted OR CI)	Attitude of EC Crude OR (95% CI)	Adjusted Or (95%)	Practice of EC Crude OR (95% CI)	Adjusted Or (95% CI)
Age group						
14-20	1	1	1	1	1	1
21.32	1.643(0.951-2.837)	1.842(0.718-4.727)	*1.931(1.109-.336.)	1.446(0.525-3.987)	*3.385(2.81-5.507)	4.775(1.969-11-582)
Ethnic group						
Gamo	1	1	1	1	1	1
Amahra	-2.242(1.160-4.336)	1.926(0.534-6.946)	-2.162(1.151-4.062)	1.913(0.508-7.204)	1051(0.534-2.067)	0.241(0.044-1.319)
Other	1.003(0.605-1.1663)	0.654(0.339-1.263)	1.155(0.67-1.922)	0.671(0.318-1.417)	1.138(0.640-2.025)	0.661(0.265-1.651)
Religion						
Protest	1	1	1	1	1	1
Orthodox	*1.605(1.02-2.525)	0.979(0.502-1.909)	-3.253(2.054-5.151)	*3.607(1.669-7.797)	1.639(0.960-2.737)	*2837(1.134-7.097)
Other	1.038(0.448-2.409)	1.227(0.207-7.262)	2.124(0.903-4.995)	0.432(0.079-2.352)	1.220(0.473-3.148)	0
Marital Status						
Never married	1	1	1	1	1	1
Ever married	0.824(0.421-1.612)	0.650(0.175-2.405)	0.774(0.394-1.521)	1.420(0.317)-6.370)	*6.240(3.608-10.793	4.183(0.810-21.604)
Number						
Child	1	1	1	1	1	1
No child						
One child	0.620(0.246-1.526)	0.678(0.152-3.027)	0.580(0.213-1.585)	1.023(0.197-5.310)	*6.215(2.940-13.137	3.409(0.624-18.6191)
Two & above	1.158(0.242-5.538)	1.815(0.247-13.311)	1.306(0.278-6.142)	0.469(0.083-2.653)	*6.414(2.461-16.715	2.154(0.350-13.2551)
With whom						
You live?						
Family	1	1	1	1	1	1
Rental House	0.781(0.416-14.67)	0.938(0.410-2.143)	0.863(0.462-1.614)	1.521(0.646-3.581)	1.049(462-378)	1.271(0.384-4.206)
Friend/husband	1.429(0.419-4.872)	1.643(0.332-8.138)	1.008(0.313-3.253)	0.469(0.83-2.653)	-6.056(2.119-17.303	0.967(0.198-4.718)
Class year						
Year I	1	1	1	1	1	1
Year II	1.380(0.850-2.239)	0.869(0.389-1.940)	*2.161(1.308-3.571)	1.768(0.710-4.402)	1.165(0.675-2.011)	1.857(0.656-5.250)
Year III	1.43(0.805-2.538)	1.351(0.66-2.744)	*2.025(1.118-3.667)	*5.168(2.240-11.921	1.210(0.649-2.258)	1.554(0.579-4.169)
Parents occupation						
Both/one Peasant	1	1	1	1	1	1
Both/one Ploye	-2.408(1.4344-4.043)	1.38(0.629-3.030)	*1.807(1.086-3.007)	0.896(0.394-2.041)	1.163(0.652-2.075)	0.501(0.176-1.426)
Both/One Clant	-1.830(1.002-3.342)	1.358(0.557-3.308)	*2.787(1.421-5.467)	*3.153(1.080-9.207)	1.051(0.537-2.057)	1.239(0.387-3.965)
Other	1.768(0.766-4.080)	2.132(0.707-6.423)	1.398(0.635-3.078)	0.777(0.254-2.354)	1.031(0.398-2.672)	1.138(0.305-4.242)
Previous Resi						
Dence Arba Town	1	1	1	1	1	1
Arba Minch Zuria	0.672(0.340-1.327)	1.083(0.434-2.703)	0.604(0.309-1.180)	0.542(0.216-1.358)	0.466(0.202-1.078)	*0.255(0.080-0.812)
Other zone/ Region	1.229(0.667-2.267)	0.982(0.367-2.628)	1.354(0.751-2.442)	0.684(0.243-1.925)	0.969(0.509-1.847)	0.727(0.225-2.344)

Sexual characteristics of respondents associated with KAP of emergency contraception

Students who saw menarche at the age of 15-19 have less knowledge of EC than those who saw menarche at the age of 9-14 (AOR=0.498; 95%

CI,0.32-0.78)

Respondents who had sex with consent have around three times more positive attitude about EC (AOR=2.9; 95% CI, 1.10-7.89) (Table 6).

Table 5: socio-demographic factors associated with KAP of emergency contraception among university and college female students In Araba Minch town, November, 2009

Characteristics	Knowledge of EC Crude OR (95% CI)	Adjusted OR CI)	Attitude of EC Crude OR (95% CI)	Adjusted Or (95%)	Practice of EC Crude OR (95% CI)	Adjusted Or (95% CI)
Age of menarche	1	1	1	1	1	1
9-14	*0.513(0.328-0.803)	-0.498(0.316-0.784)	0.925(0.636-1.507)	0.936(0.603-1.454)	1.114(0.690-1.798)	1.383(0.786-2.433)
15-19						
Ever committed sex						
Yes	1.198(0.738-1.944)	VSN	1.319(0.799-2.176)	1.263(0.120-13.321)	*36.545(17-74-75.28	6.876(0.345-136.914)
No	1	1	1	1	1	1
Ws sex by consent						
No	1	1	1	1	1	1
Yes	*2.474(1.017-6.019)	-3.172(1.245-8.081)	2.223(0.863-5.725)	*2.945(1.100-7.887)	1.103(0.559-2.178)	1.197(0.577-2.480)
Ever escaped trial of forced sex						
Yes	1	1	1	1	1	1
No	0.914(0.557-1.498)	0.803(0.477-1.3850)	*0.487(0.282-0.842)	*0.456(0.259-0.803)	*0.431(0.254-0.733)	0.653(0.347-1.230)
No response	0.926(0.477-1.791)	0.760(0.380-1.520)	0.531(0.260-1.084)	*0.457(0.220-0.952)	0.866(0.447-1.678)	0.707(0.321-1.558)

VSN=very small number

Discussion

Out of 791 respondents in our study, 66.22% reported that they have ever heard about EC. This level of awareness was almost similar to studies done on university students in Cameron, Harmaya and Nigeria (12,13,17).however, it is lower as compared to a study done in Addis Ababa University (84.2%) (6). This could possibly be due to less promotion and service utilization on EC in our study area when compared to Addis Ababa for which the methods has been widely advertised on different media so that students can easily gather information in this regard.

Major sources of information on EC for the respondents in this study were per discussion health professional teaching, from teachers and mass media. Similarly, a study in Michigan University showed that the source of information on EC for the most of the respondents was mass media (43%) (18). A study done among undergraduate student also depicts that media and friends/ families were the main source of information on EC. (6,14,15).

Most of the respondents in our study have positive attitude towards using EC. Similar results were reported in the study conducted by other authors on female students in the university of Addis Ababa, Jima and university of Trinidad. (6,14,16).

Utilization of EC in the study was low (9.6%) this could be due to lack of awareness on where to get the methods, lack of information, or low promotion and availability of the methods in the health facilities.

In conclusion, knowledge and utilization of EC is low in the study area which suggests that there has been lack of educational program and service promotion on EC. Therefore, there is a need for educational campaign in universities and colleges on reproductive health issues in general and specifically on EC. Awareness creation on EC should be highly promoted by government and non-governmental organizations working on reproductive health issues.

Acknowledgement

We would like to thank Arbaminch University for providing us financial support to conduct this study. Our heartfelt thank goes to all students from Arabaminch University and colleges in Arbaminch town who rook part in this study by providing the necessary information that we inquire. We thank Miss woinshet G/tsadik for data collection. We also like to thank Arbaminch University and all colleges found in Arbmainich town and & their staffs who helped us in facilitating the environment for the data collection. The wereda health office also provided us data on different reproductive health issues of the town.

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Reference

1. Jolene Beitz and Jane Hatchings.. Emergency Contraceptive- A vital component of reproductive health (RH) program, 2002; Western Journal of Medicine; 176:152-154.
2. La Valleeur J. Emergency contraception, Obste Gynecol Clin North Am 2000; 27:817-839.
3. Trussell J, Stewart F, Guest F, Hatcher RA. EC pills: a simple proposal to reduce unintended pregnancies, fam plan perspect 1992; 24:269-273.
4. United Nations Population fund. The state of world population 1997: New York, NY; UNFPA; 1997.
5. Segal SJ, LaGuardia KD. Termination of pregnancy: a global view. Baillieres Clin Obstet Gynaecol 1990; 4:235-247
6. Tamire W, Enqueselasie F. Knowledge, Attitude and practice on emergency contraception among female university students in Addis Ababa, Ethiopia. Ethiop J Health Dev 2007; 21(2):111-116.
7. Chris P. Adolescents and emergency contraceptive pills in developing countries. FHI working paper series 2005; WP05 (01):1-5.
8. PATH (program for appropriate Technology in Health). New approaches to early abortion. Outlook 1998; 4:235-247
9. PATH. Adolescent reproductive health making a difference. Outlook 1998; 16(3):1-8.
10. Raine. T, Harper C, Leon K, Darney. Emergency Contraception: advance provision in a yong, high-risk clinic population, Obstet Gynecol 2000; 96:1-7.
11. Ellecrtson C, shochert T, Blanchard K, Trussell J. Emergency contraception: a review of the programmatic and social science literature. Contraception 2000;61:145-186
12. Kongnyuy E.A Ngassa P.Fomulu N etal. Survey of knowledge, attitude, and practice of emergency contraception among university students in Cameroon, BMC emergency medicine 2007; 7(10: 1-7
13. Desta B. Knowledge, attitude and practice of emergency contraception among Harmaya University female students Ethiopia Journal of Reprod Health , 2011; 5(1):10-21.
14. TajureN, Pharam B. Knowledge, attitude and practice of emergency contraception among graduating female students of Jima University, south West Ethiopia. Ethiopi J health Sci 2010; 20(2):91-97.
15. Zeleke G, Zemenay Z, Weldegerima B. Knowledge, attitude and practice of emeregency contraception among
16. PareyB, AddisonL, Marjk JK et al. Knoiwldege, attitude and practice of emergency contraception among female Bharidar University students, North west Ethiopia Ethiop J Reprod Health 2009; 3(1):59-64.
17. Lkeme AC, Ezegawik HU, Uzodimma AC. Knowledege, attitude and use of emergency contraception among female undergraduates in eastern Nigeria. Jorunal Of Obstet Gynecol 2005 ;25(5):491-493
18. Anjel V, Divya A. College Students' Perceptions of emeregency contraception. J Women's Health 2008;17(1):103-111.

Origional Article

Early marriage and female schooling in Ethiopia

Eunice Muthengi

Abstract

Background: Early marriage, defined as marriage below the age of 18, is associated with numerous adverse health and economic consequence for young in Ethiopia, more than half of girls are married by the age of 18, while only one in eleven women have completed primary school. The scientific literature suggests that early marriage is associated with limited educational attainment, which in turn limits women's future economic opportunities. However, few studies have rigorously explored the association between marriage timing and educational attainment after accounting for selection bias.

Objective: this paper examines the educational gains associated with delayed marriage in Ethiopia.

Methods: the study is conducted using the 2011 Ethiopian Demographic and health survey. The analytic subsample consists of 11,154 women between the ages of 20 and 49 who are currently married. Bivariate associations are estimated using unadjusted odds ratios. propensity score matching techniques are used to estimate the effect of early marriage on educational attainment after adjusting for selection bias.

Results: as hypothesized, delayed marriage is strongly association with increased educational attainment, even after accounting for selection bias. Marriage above the age of 18 is associated with 2.8 times greater odds of completing primary school compared to marriage below the age of 18. In addition, delayed marriage is estimated to increase educational attainment by 2 years.

Conclusion: findings imply that successful programs and policies to delay the age of marriage can have a significant impact on women's education in Ethiopia and prevent adverse health effects (Ethiopia journal of reproductive health , 2012,6(1):46-55).

Introduction

Early marriage (or child marriage) is generally defined as marriage before the age of 18 (1,2). It is considered a human rights violation because children below the age of 18 may to be able to fully consent to marriage and many girls are either pressured or forced to get married against their will (3). In addition, marriage exposes girls to sexual abuse and exploitation while limiting their power in decision making (4). Early marriage is also associated with numerous adverse health effects, including sexually transmitted infections, cervical cancer, HIV infection, Adolescent pregnancy, high fertility and gender based violence (5.10).
Estimates of the prevalence of early marriage are difficult to obtain because many of these marriage are not registered and most data

Source do not include adolescents below the age of 15. According to a UNICEF report based on data collected between 1995 and 2003, early marriage is most prevalent in south Asia and Africa (1). The proportion of all women (age of 15 to 24) who were married before the age of 18 was 48 per cent in south Asia, 42 per cent in Africa and 29 per cent in Latin America and the Caribbean. Countries with rates above 60 per cent include Niger, Chad, Mali, Bangladesh, Guinea, and Guinea, and Burkian Fso. Ethiopia had the 12th highest rate of early marriage in the world. The minimum legal age of marriage in Ethiopia is 18 for both men and women; however, almost half of girls (49%) are already married by this age (11).

Contextual factors that affect the timing of marriage include demographic factors, labor market or economic systems, gender norms, and Other cultural factors (12). Early marriage is most common in rural areas of some of the poorest countries in the world (13). With few job Opportunities for educated women, parents are less likely invest in education of girls and more likely to view marriage as a way to ensure their daughters financial security. Marriage enable poor families to improve their socioeconomic Status and allows wealthy families to maintain their status by forming alliances with other wealthier families and clans (4).

In communities where a high value I placed on women's virginity at marriage, can be viewed as a way to prevent the shame associated with Pre-marital sex and pregnancy (4,14,15). The practice of bride-price provides an additional incentive to poor families who stand to gain more financially by marrying their daughters while they are still virgins.

Cultural factors also play a role in perpetuating the practice of early marriage. The status of women in some societies is closely tied to the roles of being a wife and a mother (9). Therefore, young girls may be stigmatized if they are not married by late adolescence and they may face pressure from friends and family members to have a child soon after marriage.

Factors related to family background may place certain girls at greater or lesser risk of early marriage educated parents are more aware of the negative consequences of early marriage and more likely to adopt changing norms favoring the delay of marriage childbearing (16-18) wealthy families may be more likely to invest in the education of their daughters and to delay their age of marriage on the other hand, poor families are more likely to have their daughters marry at an early age in order family. Losing a parent to death or divorce at a young age can further reduce the amount of resources available to an adolescent (19,20).

Education and Early marriage
A large research and policy literature suggest that prevention of early marriage can improve girls' economic prospects and well-being by increasing their educational attainment (3, 4, 12, 21-23). Several studies show that girls are less likely to marry at an early age if they are enrolled in school education (24-28). The main limitation of these studies is that they do not address the edogeneity of education and marriage timing. Decisions about the of marriage and school discontinuation are often made simultaneously, and early marriage can be a reason for school drop-out, even if School discontinuation precedes the marriage (29). Low education attainment can therefore be both a cause and a consequence of early marriage.
Bothe schooling and the timing of marriage can be often influence by other factors, including family background or socioeconomic status, making it difficult to establish the effects on education that are solely attributable to marriage timing (25). A second limitation of many studies on education and early marriage is that they do not address this selection bias. In one of the few rigorous studies of educational consequences of early marriage, field and ambrus (30) examine the effects of early marriage on schooling in Bangladesh using age at menarche as an instrumental variable to account for unobserved difference between girls who marry early and those who marry at later ages.

They find that each additional year that marriage is delayed between the ages of 11 and 16 is associated with almost a quarter of a year in additional schooling and a six per cent higher literacy.

Educational attainment in Ethiopia is extremely low, particularly for women: half of women ages 15 to 49 (50%) have no education and fewer than one in five (19%) have completed primary school (11). According to a qualitative study conducted in Amhara region of Ethiopia, education is a key factor that families take into consideration when making decisions about marriage for their daughters (31). Families view marriage as age best option to ensure the economic security of girls who have never been to school, or those who had dropped out of school for financial reasons. Parents who value education are more likely to delay marriage for their daughters in order to allow them to complete their education. Being educated also enables girls to have a greater influence in decisions regarding who and when they will marry. On the other had, if a family arranges a marriage for a girls who is in school (for financial reasons or because they do not value education), she is expected to drop out of school before or soon after the wedding. Two exceptions were noted: (a) promissory marriages, where a girls is promised to be married to a particular man once she finishes school, and (b) if the groom's family agrees during the marriage negotiations to allow the bride to continue her education for as long as her husband is still in school.

This study tests the following hypotheses: first, early marriage is negatively associated with educational attainment, net of other confounders, second, the association between early marriage and education remains statistically significant after adjusting for selection bias.

Theoretical Framework

The conceptual framework for this study incorporates two theories: human capital theory (32), and the human capabilities approach (33). Each of these theories makes a unique contribution to our understanding of the association between early marriage and education, as well as effects on Well-being.

Human capital theory views. Physical and mental skills and knowledge as economic assets that can influence future incomes and wealth (34). Thesea abilities can be acquired thourgh investment in formal education, on the job training, occupation specific study programs, health care and migration to adjust to changes in job opportunities (35).

The incentive to invest in various forms of human capital depends on the cost of investment, the size of returns, the relative effects of investment on earnings, and potential investors perceptions regarding the connection between investments and returns (32). The direct costs of education, for example, include fees, tuitions, books, transportation and lodging. Indirect costs included the lost wages that would have been earned if an individual was working rather than attending school.

Adolescence is a critical period for building human capital, particularly through education. Forgone wages or other returns to human capital are relatively low during this time, compared to the returns of older, more experienced workers marriage during adolescence can limit investment in education, which consequently reduces future earnings. Women with low education may view marriage as a way to improve their future economic prospects, due to their low levels of human capital.

According to the human capabilities approach, early marriage can limit women's capabilities through effects on their health, education and financial resources. The human capabilities approach is a complementary perspective to human capital theory. While human capital theory focuses on the utility of abilities and skills for economic production, Sen (33) proposes a broader framework that focuses on people's capabilities. A key understanding this perspective is the differentiation between functioning and capabilities. Functioning are defined as actual achievements, outcomes or things that people value doing or being. These might include the desire to be nourished, to be free of disease or to have self-respect (33). Capabilities refer to various combinations of functioning that are feasible, or people's freedom to live the life that they value. Sen illustrates these concepts by comparing apoor individual who is starving with a wealthy individual who is fasting. Both achieve the same functioning by not eating, but they have different capability sets; the wealthy individual has access to food but simply chooses not to eat.

Sen views health and education as both means to achieving economic development, as well as ends and indicators of development (33,36-38). Education, for example, has many noneconomic benefits for women and their children it directly affects their health through greater utilization of health care services, increased health care knowledge, reduced fertility, and a greater desire and ability to adopt preventing health behaviors (39).

Education can also have an indirect effect on health through increased involvement in decision-making the capability approach emphasizes the role of human agency, defined as the ability to be actively engaged in change instead of being a passive recipient (33). Women's agency is promoted by their independence and empowerment through expanded opportunities such as literacy, education, property rights, women's earnings power and their economic role outside of the family (33). Therefore, women who are more educated may have greater agency in deciding when and who they will marry, which is associated with delayed marriage (31).

This study examines educational gains associated with delayed marriage using nationally representative data from Ethiopia. Determining to what extent early marriage impacts educational attainment can provide policymakers and program managers with useful information to improve the well-being of adolescent girls in Ethiopia and other similar African settings.

Methodology

Data Source

The data source is the 2011 Ethiopia Demographic and health survey (EDHS) (11). The survey was conducted by the Ethiopia Central Statistical Agency, with technical assistance provided by ICF macro through the MEASURE DHS project. The EDHS is a nationally representative sample of women (ages 15 to 49 and men (ages 15 to 59)in the reproductive ages. The sample for the EDHS was selected using a clustered, stratified design. Eligible participants included all women between the ages of 15 and 49, and all men between the ages of 15 and 59 in every fifth household. The final sample for the 2011 EDHS included 16,515 women, with a 95 per cent response rate, and 14,110 men, with an 89 per cent response rate.

Analytic sample

The analytic subsample for the bivariate analysis consists of 11,154 women between the ages of 20 and 49 who are currently married. The sample excludes adolescents (ages 15-19) to avoid potential selection bias due to the fact that some adolescents may not have completed their education at the time of the interview, and we lack information regarding when the unmarried adolescents will marry. The cutoff age of 20 appears to be reasonable considering that 72 per cent of women in the EDHS are married by the age of 20 and approximately 82 per cent of girls between the ages of five and 24 are no longer attending school at the age 20 (11).

To estimate the educational attainment associated with delayed marriage, the sample is further restricted to 3,897 married women who have ever been to school.

Key Variables

The main variables are educational attainment and the age of first marriage. Educational attainment is either measure in years, or as a categorical variable: completed primary school (6+ years), some education (1 to 5 years) or no educations. The pre-2001 educational system in Ethiopia consisted of 6 years of primary education, two years of lower secondary education and four years of upper secondary school. In 2001, the system was changed into a 4-4-2-2 structure: the first cycle of primary school (grade 9-10), high school (Grades 11-13) or university training. The current definition (eight years is used when education is categorized as completed primary education versus less than primary education.

The timing of marriage is measure by the age of first marriage.tow dichotomous variables are created to identify marriage at or above the ages of 16 or 18 versus marriage before those ages. The age of 18 was chosen for its policy relevance because it is the legal age of marriage in Ethiopia.

Data Analysis

In the first part of analysis, the bivariate association between educational and marriage timing is estimated using unadjusted odds rations. All analyses are weighted using STATA's survey estimation techniques to account for clustering and differential sampling probabilities. A major concern in previous research is selection bias, which can limit the ability to make causal inferences about the effects of marriage timing on educational attainment. The propensity score matching technique is used to address bias due to unobserved factors that are associated with both education and the timing of marriage.

This technique can substantially reduce selection bias if there is considerable ovelap between the treatment if the match is based on variables that are precisely measured. However, the method only controls for between group differences, and it rests on a strong ignorability assumption that individuals with similar characteristics who are matched into different groups are randomly assigned (40).

The Pscore module STATA is used to obtain propensity scores that satisfy the balancing hypothesis, such that observations with the same propensity score have the same distribution of observed and unobserved characteristics independently of treatment status (41). The common support option is specified to restrict the sample to observations within the intersection of the supports of the propensity scores for those in the treatment group and those in the control group (42). The models include variables that are fixed or measured before the timing of marriage.

For educational attainment as the dependent variable, treatment effects are examined using two analytical methods. First, the attnd.ado module is used to estimate the average treatment effect for the treated (ATT) using the nearest neighbor method (43). This estimator matches each treated observation with an observation from the control group that is closest in terms of the propensity score. calculated by bootstrapping them using 1000 replications. Next, the match module is used to estimate the ATT using the nearest neighbor method with four matches for each treated observation (44). To examine the effect of delayed marriage on primary school completion, a dichotomous variable, a logistic regression model is estimated using the matched pairs attained using the psmatch2 command with the nearest neighbor method.

Results

Weighted descriptive characteristics for married women in the 2011 EDHS are shown in table 1. Almost half (46%) of the respondent reported their religion as Orthodox Christian and the rest were either Muslim (30%) or other Christians (23%), such as protestants or Catholics. Most of the women resided in the rural areas (80%), primarily in the Oromiay, Amhara and SNNP regions.

Table 1: weighted descriptive characteristics of married women (Ages 20 to 49) By educational attainment and early marriage, 2011 EDHS, (m=11,151)

Covariates	Sample Distribution	Primary Education (8+ yrs)	Early Marriage (< age 18)	Unweighted Number
Total	%	%	%	N
Age at first marriage (quartiles)		9.0%	65.0%	2922
8-14	29.8	3.8		2981
15-16	25.9	4.7		2897
17-19	25.6	9.4		2354
20-49	18.7	22.8		
Education			71.1	7257
No education	66.7		59.3	2557
Some primary	24.1		34.8	1340
Primary completed	9.0			
Wealth				
Poorest	19.7	0.4	68.0	2834
Poorer	20.1	1.3	69.0	1775
Middle	19.3	1.7	67.5	1631
Richer	18.6	3.6	68.2	1693
Richest	22.2	34.5	53.8	3221
Area of Residence				
Urban	20.2	33.3	53.6	3018
Rural	79.8	2.9	67.9	8136
Religion				
Orthodox Christian	45.8	12.5	70.2	4391
Muslim	29.6	4.5	66.2	4448
Protestant/Catholic	22.8	8.6	53.8	2123
Other	1.8	1.4	54.9	192
Region				
Tigray	6.6	12.1	65.1	1170
Affar	1.0	8.5	63.3	965
Amhara	27.4	6.3	81.3	1454
Oromiya	36.9	8.1	62.1	1460
Somali	2.2	4.9	57.9	688
Benishnagul Gumuz	1.1	7.2	70.5	921
SNNP	19.6	6.7	53.6	1390
Gambela	0.4	17.1	62.6	835
Harari	0.3	27.3	58.6	716
Addis Ababa	3.9	42.2	40.3	819
Dire Dawa	0.4	24.3	47.1	716

Married women, approximately two-thirds (65%) of marriage would b considered early marriages and only a third (35%) occurred after the women reached the legal age of 18. Early marriage was more prevalent among women who had no education (71%) Orthodox Christians (70%) and women residing in either Amhara (81%) or Benishangul-Gumuz (71%) regions.

Figure 1 shows the cumulative probability of marriage for all women between the ages of 20 and 49 in Ethiopia including married and unmarried women. According to these estimates, we would expect 47% of women to be married before the age of 16, 64% to be married by age 18 and 89% to be married by the age of 25.

Fig. 1: life table cumulative probability of marriage among all women ages 20 to 49, 2011 EDHS (N=12,680)

The majority of married women had never been to school (67%) and only one in eleven women (9%) had completed primary school. The mean years of education were 1.8 years among all women, and 5.5 years among women who had ever been to school (results not shown) primary school completion ranged from four per cent among women who married below the age of 15, to 23 Per cent for women who married above the age of 19. Women from the richest wealth quintile (35%) were more likely to have completed primary school than women in the lowest wealth quintile (0.4%) primary school completion also varied by region, with the highest levels observed in Addis Ababa (42%), Harari (27%) and Dira Dawa (24%).

Average Treatment effects for the Treated (ATT) Estimates of educational attainment after Accounting for the propensity to delay marriage are shown in table 2. Results are similar for both statistical techniques used (attnd and nnmathc modules).one average, marriage after the age of 18 was associated with an increase of about two years of schooling compared to marriage before the age of 18. This is equivalent to approximately one-third (36%) of the average educational attainment among married women who have been to school. The second panel of table 2 shows results from a logistic regression model estimating the probability of primary school completion after adjusting for selection bias. Marriage above the age of 18 is associated with times greater odds of completing primary school than marriage below age 18.

Table 2; Propensity score matching results fro effect of delayed marriage (age 18+) on educational attainment, 2011 EDHS, married women with some education, ages 20 to 49 (N=3,897).

	Method 1[a]	Method [2]
Educational Attainment (Years)	ATT (SE) 2.219 (0.140)***	ATT (SE) 2.072(0.204)***
Primary education complete	OR (95% CI) 2.793 (2.22-3.51)***	

A Method 1 uses the ATTND module and Method 2 uses the NNMATCH module.
B Logit model estimated using matched pairs.
*** p<0.0001

Discussion

This study is one of the first to persuasively demonstrate robust estimates of educational gains associated with delayed marriage in Ethiopia, using nationally representative data. While the cross-sectional study design makes it difficult to infer causality from the results, the study accounts for observed and unobserved heterogeneity in the estimated effect of marriage timing on educational attainment.

Marriage during adolescence can either be a cause or a consequence of reduced education. For some girls, marriage is one of the few options available if they have never been to school or if they are forced to drop out of school due to financial or other reasons. On the other hand, girls whose education is interrupted in order to get married are less likely to continue their education due to additional responsibilities and expectations of being a wife and a mother.

Results indicate that delayed marriage above the legal age of marriage in Ethiopia, could significantly increase educational attainment for young girls. Among married women who had been to school, the effect of delayed marriage was 2 years, which is a substantial considering that the mean years of schooling for this sample was 5.5 years. On the other hand, the findings imply that there are other important factors other than marriage that affect educational attainment in Ethiopia. Further research is needed to elucidate these issues. Which might include school quality, late age of starting school, lack of time for study, etc.

One example is the Berhane Hewan program in Ethiopia (45), which was implemented in Amhara region by the population council in collaboration with the ministry of youth and sports. Married and unmarried girls were provided with school materials and other resources to stay in school, or to return to school if they and previously dropped out. Girls who have never been to school had the option of participating in groups that provided non formal education, reproductive health education, and life skills training. In addition, families of unmarried girls were promised a goat at the end of the two year program period if their daughters did not marry. Researchers reported significantly higher rates of reproductive health knowledge and contraceptive use, higher education enrollment and lower rates of early marriage in the study site.

Limitations

The main limitation of this study is the cross-sectional design, which limits the ability of making causal interpretations for the observed associations. Bias due to observed and unobserved factors that might be associated with both educational attainment and the timing of first marriage is addressed using propensity score matching, but the study is still subject to bias due to unmeasured difference between women who are married at an earlier age compared to those who delay marriage. Another limitation of the dataset is the lack of information regarding the timing of education and reasons for school dropout. The estimated effects of marriage timing reflect the amount of education associated with the early marriage regardless of whether school discontinuation occurred before or after marriage.

In conclusion, these findings suggest that delaying the age of marriage increases women's human capital, which is likely to increase their access to economic resources and enhance their human capabilities. However, more research is needed to establish the causal relationship between observed outcomes. Additional research would require longitudinal data starting before the age of adolescence, with information about why girls drop out of school and better measures of family background, education and marriage timing, and economic measures in adulthood including income, occupation, and wealth.

Acknowledgement

The author would like to acknowledge the MEASURE DHS project which provided access to the Ethiopian Demographic and health survey. The data was collected by the Ethiopia Ministry of health and the Central statistical Agency, with technical assistance provided by ORC Macro. In addition, I would like thank Dr. Anne pebley at California Center for population Research for her valuable advice and feedback during the conceptualization and writing of this paper.

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References

1. UNICEF early marriage. A harmful traditional practice: A statistical exploration new York, NY: UNICEF; 2005.
2. Federal democratic republic of Ethiopia. The revised family code proclamation No.2013/2000. Federal Negarit Gazetta; 2000.
3. Bunting A. Stages of development: marriage of girls and teens as an international human rights issue. Social & Legal Studies. 2005 Mar; 14(1): 17-38 PubMED PMID: ISI: 000227159900002.
4. Mathur S, Green M, Malhoitra A. Too Young to Wed: the Lives, Rights and Health of Young Married Girls. Washington, DC: ICRW; 2006 (cited 2009 January 15). Available from: http://www.icrw.org/photoessay/pdfs/ttoyoungtowed-1003.pdf.
5. Jensen R, Thornton R. Early female marriage in the developing world. Gender & development. 2003; 11(2):9-19.
6. Clark S. Early marriage and HIV risks in sub-Saharan Arica. Stud Fam Plann. 2004Sep;35(3):149-60 pub-Med PMID: 15511059.
7. Clark S, Bruce J, Dude A. Protecting young women from HIV/AIDS: the case against child and adolescent marriage. Int Fam Plan perspect. 2006 Jun; 32(2): 79-88. pubMED PMID: 16837388.
8. Gavin L, Galvaotti C, Dube H, McNAghten ADF, Murwirwa M, Khan R, et al. Factors associated with HIV infection in adolescent females in Zimbabwe. J Adolesc Helath 2006 Oct; 39(4): 596 e11-8. PubMed PMID:16982397.
9. Nour NM. Health consequences of child marriage in Africa. Emerg Infect Dis. 2006 Nov;12(11):1644-9. PubMed PMID: 17283612
10. Santhya KG, Ram U, Acharaya R, Jejeebhoy SJ, Ram F, Singh A. Associations between early marriage and young women's marital and reproductive health outcomes: evidence from india. International perspectives on sexual and reproductive health. 2010 sep;36(3)132-9. PubMEd PMID: 208807980 Epub 2010/10/01.eng.
11. Central Stastical Agency (CSA), ICF international. Ethiopia Demographic and health survey 2011. Addis Ababa, Ethiopia and Calverton, MD, USA; 2012.
12. Jain S, Kurz K. New Insights on Preventing Child Marriage. Washington, D.C.: international Center for Research on Women (ICRW), 2007.
13. Brown G. Out of wedlock, into school: combating child marriage through education. London, UK: the office of Gordon and Sarah Brown 2012.
14. Schuler SR, Btaes LM, Islam F, Islam MK. The timing of marriage and childbearing among rural families in Bangladesh: choosing between competing risks. Soc sic Med. 2006 Jun;62(11):2826-37.PubMed PMID:16352384.
15. Dagne HG. Early marriage in northern Ethiopia. Reproductive health matters. 1994;2(40:35-8.
16. Aryal TR. Age at first Marriage in Nepal: differentials and determinants. J Biosoc Sci. 2007 Sep;39(5):693-706. PubMed PMID: 17156587.
17. Bates LM, Maselko J, Schuler Sr. Women's Education and the timing of marriage and childbearing in the next generation: evidence from rural Bangladesh. Stud Fam Plann. 2007 Jun;38(2):101-12.PubMed PMID:17642411.
18. Choe MK, Thapa S, Mishara V. Early marriage and early motherhood in Nepal. J Biossoc Sci. 2005 Mar; 37 (2):143-62 PuMed PMID: 15768770
19. Moore KA, Myers DE, Morrison DR, Nord CW, Brown B, Edomonston B. Age at first childbirth and later poverty. J Res Adolesc. 1993;3(4):393-422. PubMed PMID: 12319701
20. Miller BC, Benson B, Galbraith KA. Family Relationship and adolescent pregnancy Risk A Research Synthesis. Developmental Review. 2001;21(1):1-38.
21. International Center fro Research on Women (ICRW). How to end child marriage: action Strategies fro Prevention and protection Washington, D.C: ICRW; 2007. Available from: http://www.incrw.org/docs/2007-chidlmarriagepolicy.pdf.
22. Levine R, Lloyed C, Greene M, Grown C. Girls Count: A global Investment & Action Agenda Washington, D.C: Center fro Global Development; 2008 (cited 2008 March 19). Available from: http://www.icrw.org/docs/Girls-Count-a-Global-Investment-&-Action-Agenda.pdf.

23. Erulkar A, Muthengi E. Evaluation of Berhane Hewan: A prpgram to delay Child Marriage in Rural Ethiopia International Perspective on sexual and Reproductive health. 2009 Mrach; 35(1):6-14.
24. Jejeebhoy SJ. Education and Women's Age at Marriage in: Jejeebhoy Sj, Editor. Women's education autonomy, and reproductive behavior: experience from developing countries. Oxford; England: Clarendo press; 1995.p.60-77
25. Singh S, Samara R. Early Marriage among women in Developing countries. International family planning perspectives. 1996;22(4):148-75.
26. Singh S. Adolescent childbearing in developing countries: a global review. Stud Fam Plann. 1998 Jun; 29 (2):117-36.PubMed PMID: 9664627.
27. Gupta N, Mahy M. Adolescent Childbearing in Sub-Saharan Africa: can increased schooling alone raise ages at first birth? Demographic Research. 2003;8(4):93-106.
28. Yabiku ST. the effect of non-family experiences on age of marriage in a setting of raped social change population studies. 2005;59(3):339-54.
29. Brien MJ, Lillard LA. Education, Marriage,and first conception in Malaysia. The journal of human resources. 1994;29(4):1167-204.
30. Age of Menarche, and female schooling attainment in Bangladesh. Journal of Political economy. 2008 ;116(5):881-930.
31. Muthengi E. Education and Decisions about the Timing of Marriage in Amhaara Region, Ethiopia. JENDA: A journal of Culture and African Women Studies. 2012 (20):41-62. PubMEd PMID: 143031. English.
32. Becker GS. Investment in Human Capital: A theoretical Analysis. The journal of Political economy 1962; 70(5):9-49.
33. Sen A. Development as freedom. Oxford: Oxford University press; 199. XVI, 366 s.p.
34. Sweetland SR. Human capital theory: foundations of a field of inquiry. Review of educational Research. 1996 January 1, 1996;66(3):341-59.
35. Schultz TW. Investment in Human Capital. The American Economic Review. 1961;51(1):1-17.
36. Sen A. why health equity? Health economics. 2002 Dec; 11(8):659-66. pubMed PMID: ISI:000180020900001.
37. Sen A. health in development bull world health organ. 1999;77(8):619-23 PubMed PMID: ISI:000180020900002.
38. Sen A. Economics and health. Lancet. 1999 Dec; 354:20-. PubMEd PMID: ISI:00084342100021.
39. Desai S, Alva S. Maternal education and child health: is there a strong causal relationship? Demography. 1998 Feb;35(1):71-81. PubMed PMID: 9512911.
40. Foster EM. Propensity score matching: an illustrative analysis of Dose response medical care. 2003;41(10): 1183-92.
41. Rosenbaum PR, Rubin DB. The central role of the propensity score in observational studies fro causal effects. Bimoetrika. 1983 April 1,1983;70(1):41-55.
42. Caliendo M, Kopeinig S. Some Practical Guidance for the implementation of propensity score matching SSRN eLibrary. 2005.
43. Becker SO, Ichino A. Estimation of average treatment effects based on propensity scores. The state Journal. 2002;2(4):358-77.
44. Abadie A, Herr JL, Imbens G, Drukker DM. NNMATCh: state module to compute nearest- neighbor bias-corrected estimators 2004.
45. Erulkar A, Muthengi E. Evaluation of Berhane Hewan- A Pilot program to promote education and delay marriage in rural Ethiopia. New York: Population Council, 2007.

ORIGINAL ARTICLE

Obsteric near-miss and maternal death: the case of Ayder Teaching Hospital, Mekelle, Ethiopia

Goitom Berhane, Amanuel Gessessew, Jos Van Roosmalen, Thomas Van Den Akker

Abstract

Objective: to study severe actute maternal morbidity and maternal death in Ayder teaching Hospital

Methodology: facility-based survey of severe acute maternal morbidity and maternal death with consecutive entry of cases from records for all pregnant, recently delivered or aborted patients who appeared and were admitted to Ayder referral teaching Hospital from January, 2008 through December, 2010.

Results: there were 2107 hospitalizations fro maternal health services; of these, 204 were severe acute maternal morbidities and 9 direct maternal deaths with almost 23 severe acute morbidities fro each maternal death, with an overall rate of severe acute maternal morbidity of 101 per 1000 deliveries and a maternal mortality ration of 427 per 100,000 live births.

Conclusion: in the era of countdown to 2015 and with the meager chance of Millennium development Goals (MDG5) being achieved in many African counties, including Ethiopia, the analysis of severe acute maternal morbidity along with maternal death should be a new paradigm in the assessment of maternal health and its progress at all levels. Ayder Teaching hospital should have its own uniform criteria for inclusion of severe acute maternal morbidity based on other hospitals experiences and the scientific plausibility to tackle facility- based avoidable severe maternal morbidity and mortality. Furthermore, a prospective study should be done to exactly know the level of substandard care (Ethiopian Journal of Reproductive health, 2012,6(1): 56-63).

Key Words: Near miss, maternal, Mortality, Ayder, Survey, Pregnancy, Complication

Introduction

Over eight million women suffer from complications of pregnancy or childbirth and over 287,000 women die giving birth Annually worldwide (1). A profound disparity exists Between nations globally with the heaviest burden in resource poor countries. In sub-Saharan Africa (SSA) women have a one in 39 Lifetime risk of dying in child birth compared to one in 3800 chance fro women of industrialized nations (2,3) fro majority of complications cannot be predicted with certainty or often cannot be prevented, giving birth with a medically trained provider is the key intervention in safe motherhood programs. Improving maternal mortality has received recognition at the global levels evidenced by its inclusion in the Millennium Development Goals (MDGs) (4-8).
Women die at home because of delay in the decision to seek care (phase-I delay), or during transport to the appropriate level of health facility (phase-I delay). Moreover, even if women make it to the appropriate level of care in time the, often consider time elapse until onset of correct treatment (phase-I delay), leads to mortality or serious morbidity (9,10).

A maternal near miss case is a woman who nearly died but survived a complication that occurred during pregnancy, child birth or within 42 days of termination of pregnancy (11). The study of data collected on maternal near-miss and maternal deaths has been found to be useful for the identification of health systems failures and a relevant source of information for policy makers in the selection of maternal health care priorities. Severe acute maternal morbidity appears along a health continuum that extends from normal pregnancy and delivery to organ failure and maternal death (12-19). Women who survived severe complications during pregnancy, childbirth and the postpartum period could serve as surrogates to help us gain a better understanding of the set of conditions and preventable factors that together contribute to maternal death (20).

Unlike in the developed countries, there is limited experience with the use of near-miss reviews as a tool fro monitoring the quality of maternity services in developing countries. This is probably as a result of the persistently high levels of maternal mortality that has overshadowed other severe obstetric complications, from which lessons could equally be learned(21).

In spite of the high maternal mortality rations in many of the centers in resource-poor settings, the actual number of maternal deaths per center may not allow detailed quantification of associated risk factors and determinants that are locally important. Because near-misses occur much more frequently than maternal deaths, more comprehensive and statistically r

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Women die at home because of delay in the decision to seek care (phase-I delay), or during transport to the appropriate level of health facility (phase-I delay). Moreover, even if women make it to the appropriate level of care in time the, often consider time elapse until onset of correct treatment (phase-I delay), leads to mortality or serious morbidity (9,10).

A maternal near miss case is a woman who nearly died but survived a complication that occurred during pregnancy, child birth or within 42 days of termination of pregnancy (11). The study of data collected on maternal near-miss and maternal deaths has been found to be useful for the identification of health systems failures and a relevant source of information for policy makers in the selection of maternal health care priorities. Severe acute maternal morbidity appears along a health continuum that extends from normal pregnancy and delivery to organ failure and maternal death (12-19). Women who survived severe complications during pregnancy, childbirth and the postpartum period could serve as surrogates to help us gain a better understanding of the set of conditions and preventable factors that together contribute to maternal death (20).
Unlike in the developed countries, there is limited experience with the use of near-miss reviews as a tool fro monitoring the quality of maternity services in developing countries. This is probably as a result of the persistently high levels of maternal mortality that has overshadowed other severe obstetric complications, from which lessons could equally be learned(21).

in spite of the high maternal mortality ramos m many of the centers in resource poor erring, the aenal number of maternal deaths per centre may not allow detailed quantification of associated risk and determinants that are locally important. Because near misses occur much more frequently than marernal deaths, more comprehensive and statistically reliable quantitative ana that are of value to clinical audit can be rapidly conducted (22) Like elsewhere in SSA poorer countries, Ethiopia is behind the rrack in achieving MDGs by the year 2015, unless urgent and intensified efforts are made to improve maternal and newborn health, which remains the most elusive of the MDGs. Only 10% of women receive clean and safe instirutional delivery. 90% of births are conducted at home, where care at time of birth when both mothers and newborns are more likely to die is particularly lacking (23). The recent estimate of maternal mortality ratio of Ethiopia from 2011 EDHS has not shown any significant reduction compared to the estimate the 2005 EDHS. The insignificant reduction of neonatal mortality could be mirror for a possible suboptimal improvement in the reduction of maternal ratio (24). This study aimed at estimating the rate of severe acute maternal mortality and morbidity in Ayder Teaching Hospital (ATH) Mekelle gray. It also examined the factors and causes associated with the development of severe acute maternal morbidity (SAMM)

Materials and methods

It is a facility-based survey of SAMM and maternal death with consecutive entry of cases from records. ATH is a tertiary teaching hospital under College of Health Sciences, Mekelle University for medical students post graduate studies in integrated emergency surgery, obstetrics and gynecology, pediatrics/child health, infectious diseases, public health, pharmacy and nursing The key technical staffs within the maternity unit include two obstetrician/gynecologists, 3 general practitioners, 13 nurses/midwives with different experiences in maternity care. The department of obstetrics and gynecology is well equipped to offer comprehensive emergency obstetric care (CEmOC) activities and general gynecologic health services with a total bed capacity of 50

All pregnant, delivered or women care and who appeared and were admitted Hospital from January 2008 to December 2010were included in the study. Individual women's card, backed up with referral slip, delivery room, operation and post abortion care log books traced by their specific medical registration number were also examined All cases of severe obstetric hemorrhage, severe preeclampsia eclampsia, obstructed labor, ruptured uterus, severe anemia, ruptured ectopic pregnancy, puerperal sepsis, abortion related sepsis and uterine and/or bowel perforations, and anesthesia accidents and all maternal deaths were enrolled in the study (25,26). All other women were excluded. Complete survey of three years data based on estimated 10% SAMM prevalence in published sources of CEmOC to sum up a minimum sample of 200 as per WHO requirement. This is the minimum number of included cases in studies considered in the W review of SAMM(27) Cases were from hospital records the incidences of above mentioned complications in previous years, based on the performance, this hospital's accomplished in sample size could be study about 3 years time period during period)

The questionnaire was pretested on a randomly selected patient's records by using their medical actual data the registration number before collection. Four data collectors (clinical nurses) were imparted 1 day training. Collection of data was initiated after they demonstrated adequate competence in filling consistent data on five separate cases each. A total of 2107 patient files concerning women who were admitted in ATH, maternity unit during pregnancy, abortion, delivery or postpartum period were found. Relevant data on socio-demographic, patient reproductive characteristics, and reason for admission (diagnosis), type of management and vital status and total duration of hospital stay were retrieved from patient files, delivery and abortion log books, operation room records and patient referral slips. A modified WHO standardized multi country survey questionnaire (28) was used to collect the data after pretesting.

Every case was given a unique number; data were cleaned and entered into Microsoft Excel sheets and were transported to SPSS version 17 for analysis, both descriptive and inferential. Rates, Ra-tios, tables, bar charts and box plots were used to is play descriptive features of different characters tics of the women.

Binary logistic regression was used relative risk of development of maternal death.

Operational definitions

Maternal morbidity: Is any illness or in caused or aggravated by, or associated with pregnancy or childbirth.

Maternal mortality: Is defined as the death of woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or is management. Referral status omen were categorized formally referred when they were referred by qualified health personnel from other hospitals or health facilities such as health centers or private clinics. Otherwise, women who came directly ATH, passing referring facilities categorized as self-referred from home.

Severe acute maternal morbidity or near miss: Is a severe life-threatening obstetric complication necessitating an urgent medical intervention order to prevent likely death of the mot pregnant or recently delivered woman, in immediate survival is threatened an survives by chance or because of the hospital received. The criteria for inclusion o care ear miss are based on validated disease-specific Criteria clinical), comprising o categories

Chance or because of the hospital care she received. the for inclusion of s Near miss are based on validated disease specific criteria (clinical), comprising of five diagnostic categories: hemorrhage, hypertensive disorders in pregnancy, dystocia, infection and anemia 15, 25).

Severe obstetric hemorrhage: Severe hemorrhage leading to shock, emergency hysterectomy, coagulation defects and/or blood transfusion of at least 2 units.

Severe anemia: Low hemoglobin level or clinical signs of severe anemia in pregnant ring or recently delivered aborted women without severe hemorrhage.

other: Acute severe morbidities other than the failure ones, like major abdominal women with evisceration of bowel anesthesia accidents, DKA during pregnancy, major cardiac disease. Complicated/aggravated by pregnancy among others.

Ethical clearance and permission to use records me this study was obtained from Tigrai Science and Technology Institute, Re community Committee and Health search Ethics Review committee.

Data were collected in card there was the no other person to see the document. Data collected were strictly trained to keep confidentiality of data. It was made anonymous, no identification or name was recorded.

There were 2107 hospitalizations for maternal services i.e. 1348 (64.0%) deliveries vaginal deliveries, 295 Cesarean section (CS), h rate of 21 90%), 704 (33.4%) abortions, 50 (2.4%) other pregnancy delivery related wit in AT during the three year period 2008 to December 2010). There were 1365 morbidities January newborns of the 1348 deliveries.

The mean age of all women was 25 5.5(SD) years. The ratio of married women was 68.5 1443) while the remaining 31.5 664) were single widowed or divorced. Table 1).

There were 204 severe acute maternal morbidities and 9 direct maternal deaths with 22.7 severe morbidities for each maternal death (Table2), with overall rate of severe acute maternal morbidity 101 per 1000 deliveries and maternal mortality ratio of 427 per 100,000 live births. The hospital's direct obstetric case fatality rate was 4.2%.

he most frequent severe acute maternal morbidities were major obstetric hemorrhage 41 (19.2%), obstructed labor 37 (17.4%), severe preeclampsia/eclampsia 32(15%), and ruptured ectopic pregnancies 31(14.6%).

Multivariate logistic regression showed that rural residents, women referred from other health facilities and women who did not have ANC follow up had statistically increased risk of having severe acute maternal morbidity and/or maternal death with IAOR (95%CD) -2.96(2.02, 4.36), respectively. Compared to term pregnancies preterm pregnancies had 2.13 (95%CI 1.36, 3.34) times more risk of having severe acute maternal morbidity/ mortality while abortions of <14 weeks of gestational age had significantly lower risk of developing severe obstetric complications maternal death (AOR (95%C)] -0.02(0.01, 0.08) No statistically significant association was observed between severe acute maternal morbidity maternal death and predictor variables of age category, parity level, marital status, and whether the woman had delivery/ abortion outside a health facility.

The incriminated causes of death were ruptured uterus (3), sepsis (3), acute renal failure pulmonary Thrombo-embolism and eclampsia, each contributing 1 death.

Discussion

the results of this study shed light on what is happening to our young women even after they h the appropriate health care facility for the care they need. The ratio is located in the wide of near miss described in literatures per 1000 deliveries (9) On the other hand the case fatality rate for direct obstetric complications is 4.27% (MMR 427/100,000 live which is higher than the UN hs) recommendation i e, 1% (8), suggesting a suboptimal level of care of life-threatening complications This study fails to point out where e suboptimal level of care is, i e. poor health of the behavior delay or seeking substandard transportation or poor quality of care at Ayder hospital. Similar study in Brazil, the maternal near miss ratio was 44.3/ 1000 live births (0), At Olabisi Onabanjo University Teaching Hospital Sagamu, a state-owned referral centre in southwest Nigeria, maternal mortality ratio is close to 2000 per 100,000 deliveries.

The majority of these maternal deaths were largely e unpreventable a they occur in unbooked emergency cases that present too late to the hospital and die shortly after admission (14 study had also proved that the three delay model is still functioning 41 cases of obstructed labor, 13 cases of ruptured uterus. Furthermore the rural resident women were found to be significantly associated with higher risk of having severe acute maternal morbidity/maternal death indicating that they had lower access for comprehensive emergency obstetric care. This analysis showed that of the 9 maternal deaths, 8 of them were potentially preventable by avoiding the three delays. Of the 204 severe maternal morbidity cases that receive critical care in our hospital still unknown proportion of them could be prevented which this study failed to identify.

In this study, preterm gestational age was associated with having increased risk of severe complications compared to term gestational age IAOR with 95% CI=2.13(1.36, 3.34)] and having abortion of <14 weeks GA was associated with the least risk of having severe acute morbidity compared to term gestational age [AOR with 95%Cl 0.02(0.01, 0.08) consistent with the fact that pregnancy related maternal complications increase as gestational age of the pregnancy increases, ie. having safe abortion is much better than having delivery with regard to risk of complications.

This analysis failed to show the relative advantage of having facility. This finding ion with in health enormous can be a testimony for the difference that exists among health facilities public or private with regard to the quality of maternal care services that is rend High parity level, i.e. >3 deliveries was found to be associated with relatively increased risk of developing severe acute morbidity IAOR with 95%CI 1.78 (1.00-3.16)]. On the other hand the variable included doesn't consider the level of the health facility, i e. hospitals and health centers were treated equally.

As displayed in Table 2, the specific causes of mortality in ATH during the study period are similar to what is explained in different publications. The only exception is postpartum hemorrhage. In this study, there hasn't been found any patient chart or documentation where a maternal mortality is caused by postpartum hemorrhage despite the known fact that it is the number one leading cause of maternal death in a facility and in the community worldwide. So one can question on the quality of documentation and /or study on what is special about ATH with respect to handling of obstetric hemorrhage.

As this particular study is based on secondary data that was not designed for analysis of severe acute maternal morbidity and/or maternal death, the results could have become more informative if prospective cohorts study with inclusion of other pertinent variables, like educational attainment and occupation, was conducted in the same set up.

Furthermore, this study didn't indicate at which point in the continuum of maternal care is the level of mismanagement or substandard care and the degree of avoid ability of the particular maternal death or severe acute maternal morbidity. This is mainly because of the study design, as a facility based study, it doesn't show the true burden of severe acute maternal morbidity and death in the community. It is only the tip of ice-burg of the actual problem.

In the era of countdown to 2015 and with the meager chance of MDGs being achieved in many African countries, including Ethiopia, the analysis of along with maternal death should be a new paradigm in the assessment of maternal health and its progress at all levels. Cases of SAMM survive a potentially fatal complication during pregnancy, delivery or during puerperium. This favorable outcome is a question of the implementation of good clinical care in particular for CEmOC facilities and the existence of strong health system in the re- gion or at national level. ATH should have its own uniform criteria for inclusion of SAMM based on other hospitals experi ences and the scientific plausibility to tackle facility based avoidable SAMM and maternal mortality.

Furthermore, a prospective s should be done Su ro exactly know the level of care and the root causes of severe underperformance of the l's maternity unit effort is needed to make the hospital a center of excellence. Maintenance of quality secondary data by giving paramount to documentation of maternity events, and culture care to be provided right or wrong should be able to use the data for improvement of care and for policy makers.

Acknowledgement

the authors would like to Acknowledgement the financial support from UNFPA country office in Addis Ababa, Dr. Znihuan Abete and Mr. Yohannes Tewelde and Ayder Hospital Midwives and archive staff who participated in the data collection.

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13. hans HIB, Health Beyond (2008/09) et Reviewing 9. to for and acute care deaths in and casecontrol study. doi a a 2009, morbidity Medical BioL 19802008: Safet mottality a care. rapid 2002 process 56 Bulletin 1. 2010 November Sagamu, audit and health Prernancy British Reprod from a to 10. learning mortality 181 morbidity. Gonecol handbook, of Make 2005 morbidity 1186/17424155. matemal ps6 1990 death countries, maternal obstet quality doi. Mortality: maternal for enquiries, maternal Eur death morbidity maternal obstetric and online J 3700- obstetric monitoring severe in Complications 2008,56 on Maternal mortality 4 maternal Severe of 93 maternal and morbidity years. 1609,23 Health group severe events Deaths over tool 2003 ng GD. Maternal section 5. obstetric Reviewing Reproductive al. and patterns Lancet 103-124 estimates:Trends acute Mantel (2010), adjunct Med predictors profile 2. work emergency of maternal 375; J. a 2005; useful Health pp. WHO AP, standard ere the Health Macdonald misses: toward Incidence for World Numbers: M, changing E 23:287-296 AP. care miss" 2004. MDG Hardi Monitoring the SL a Sew Bank Organization: Wolfe et.al; MacDonald necol Naghavi Complex: EFr Near and RC, miss maternal AMDD: towards complications RC Ellen 2009, C. of UNICEF, 29. evaluating M G progress RC, Reprod Hall. & S, v. Kl, Cecatti, Gy near study. C. and Bureaua2000 Bewley Cli Maternal Jose Filippi life-threatening JP, Academic Obstet analysis UNICEF, Souza (2003) p-31 M, Res Oladapo, World Pattinson Foreman Pattinson Bot he Pract Health H ficarion cru MC, T Pretoria UNFPA, Sousa Waterstone retrospective 67:231-243 Olufemi systematic Hogan Maria indicators; 1186/17424755 WHO, 102:6-10

AMDDI Monitoring emergency Maternal H Sousa. ose Ca C MC, Foreman K). Naghavi M. Su vdbook, 2009. atic analysis of progress ctive 2008.56 doi, 10, 1186/1742 A155- 56 .243 and M towards MDG 5. 2010), M mortality for 181 cow (2003) car m La 375

oladapo. u a useful adjunct M. 1980-2008 Io, pective study. et a ear to maternal death enewiries. British Medi Bullen Waterstone M. Ber Reprod miss obstetric events and maternal denths in BAL. 2001 vley Health, 2005 2, 9. Publ online Nige a S, olfe C. 20os November 1. doi UNICEF 1089-1094. dence and predictors of severe obstetric morbidityn case control study Cecatti..

13. UNICEF Annual for Ethiopia, March 2010

14.Cecatti., J Souza & et, al November 2007 "Research on severe maternal morbidities and near Reproductive Health Matters, Vol. 15, No.

15. United Nations Millennium Development Goals. 2007 misses in Brail Accessed May 3, Available http://www.un.org millennium goals/

16. AMDD Working Group on Indicators. Averting maternal death and disability. Program note: UN proc indicators to assess needs in emergency obstetric services: Using Obstet 2002, 78:275-282

17. Gibson JL, Martin Pakistan, Peru and Vietnam. Int Gynecol. 18. parameters of KD, Singer AP: Setting priorities in healthcare organizations: criteria, processes and

18.Filippi V. success. BMC Health S Research 2004. 4(24) 19 for Ronsmans C, Campbell OM, et al. Maternal health in poor countries: the broader context and a call action. Lancet. 2006 Dec 16; 368 (9553): 21234

19. Graham WJ. Now or never: the case for measuring maternal mortality. Lancet 2002, 359: 701-704 Cross Rsi PubMed.

20. Pattinson RC, Buchmann E, Mantel G, Schoon M. Rees H. Can enquiries into acute maternal morbidity act as a surrogate for maternal death severe

21. Loudon Maternal mortality enquiries? BJoG. 2003: 110 8s9-893 72 (Suppl 1:241S-246S Uuly) in the past and its relevance to developing countries today. Am J Clin Nwt 2000 23.

22. Liljestrand J. Strategies t reduce maternal mortality worldwide. Cum Opin Obstet Gynecol 2000; 12: 513-5

23. Central Statistical Agency of Ethiopia, EDHS 2011, Preliminary report

ORIGINAL ARTICLE

Determinants of premarital sexual initiation among Wukro high school sexual of Northern Ethiopia

Abstract

Background: Sexual Activities among adolescents have been increasing worldwide. The risky. Unprotected and non voluntary nature of sexual activities of adolescents put them at higher reproductive health problems including HIV/AIDS.

Objective:

Methods: Institution based cross sectional survey was conducted collected from 588 student using pretested, structured and self administered questionnaire selected by stratified cluster sampling deaned and analyzed SPS Version 16.0 Logistic regression model was used to identify predictors of premarital sexual initiation and do control confounders.

Results: Three hundred ten (52 males and 278 47.3% females participated in the study. A quarter, participants had premarital sexual debit Among them, 86 (56 57% had used at the first debu and consistent condom use was reported in 5058 1% of the sexually active students who had used cond initiation. Are less than 18 years was protective factor for premarital sexual debut (AOR at 95%CI:0.42(0.21,0.86)) However, substance abuse like alcohol consumption and cigarette smoking as well as peer pressure were risk factors for premarital sexual initiation.

Conclusion: Both premarital and early sexual initiation was high but total c and consistent condom in utilization was low in relative terms. The need to strengthen age and gender based IEC/BCC services about reproductive health issues within the school environment has paramount importance (Ethiopia journal of reproductive health.2012.6(1):64-69).

Introduction

Adolescence is a period dynamic change the transition from childhood cent manifested physical, and maturation. Habits that are formed during adolescence have major effects in adulthood health welfare. Age at first is often used as a for t exposure to sexual But the two events may not occur at the same time because young people may engage in sexual activity marriage age of sexual debut for girl boys is and 20 years, respectively and are both sexes in the country (l, 2).

In Ethiopia, most programs for young people tend deliver general and nonspecific programs that fail to recognize the distinct needs of girls and boys at different ages and the unique needs of married and unmarried adolescents Furthermore, the limited access to targeted reproductive health (RH) care and services for young people contributes for many of the RH problems.

Adolescents and youth practice risky, unprotected and non-voluntary sexual activities. As a result, they are most likely to face RH problems including HIV/AIDS. The Highest Infection rate of HIV In Ethiopia is seen Among Young people between the ages of 15 years (3). In order to mitigate this problem, the National RH Strategy of Ethiopia is set our to increase the median age of first sexual intercourse from 16.4 to 18 and to decrease by 20 percent the HIV prevalence among age range of 15 to 24 years by 2015 (1, 3).

Therefore, the aim of the determine premarital sexual present study was utilization and identify associated premarital sexual initiation preparatory and high school students, Eastern Tigray, Ethiopia.

Materials and methods

This is an institution based cross-sectional surv conducted on April 30, 2010 in Eastern Zone of Tigray. Eastern zone is one of the six zones of Tigr regional state, consisting of seven rural and two town districts. Wukro district is one of the two town districts of eastern zone which is found 825 km from Addis Abab capital of Ethiopia. This district has one preparatory and one high school with a total of 4,847 students and the study was conducted in these schools (4, 5)

All preparatory and high school students of Wukro district, who were enrolled in the second semester of 2009/2010 academic year participated in this study. All regular students who were available at the data collection day from the selected sections (clusters) were included in the study. Those students who did not read and write the local language "Tigrigna" were excluded from the study.

Sample size was estimated based on single population proportion formula assuming the proportion of premarital sexual initiation 51.3 (6), confidence level 95%, margin of error 4%, non-response rate 10% and target population 4,847 Students (5). After considering finite population correction factor and adding non response rate, the estimated sample size was 588.

For sampling, a stratified cluster sampling technique was employed. The total 87 sections were divided into four strata (grade 9, 10, 11 and 12) and then 14 sections were selected from each grade level proportional to the number of sections using simple random sampling method. Finally, the questionnaires were provided to all students in the selected sections (clusters).

Premarital sexual initiation was taken as dependent variable and different socio demographic characteristics such as risky behaviors, peer pressure, parental socioeconomic status and communication about sex matters were considered as independent factors.

Operational definitions

Premarital sex: A penetrative penile vaginal penile oral and/or penile anal sexual intercourse performed before any type of marriage. Early sexual intercourse! A penetrative sexual intercourse performed before the age of 18(7)

Safe sex: Abstinence before marriage, being faithful to a single partner, and/or consistent and correct use of condom at every sexual practice. Condom user Consistent and correct use of condom during every sexual practice. Sexually activer A student who had premarital sex at least once prior to this survey.

A pretested, structured and self administered questionnaire prepared in English language was used to collect data after translation into the local language "Tigrigna Six intern medical students as data collection facilitators, two public health instructors as supervisor and two unit leaders of the schools as coordinators were deployed to assist the research work at the time of data collection.

Data collection facilitators and supervisors were trained for one day A pretest was conducted on students at the adjacent district high school and

of the questionnaire was undertaken modification During data collection, respondents were segregate d sex. according to their educational level an respondent sat apart and discussion alongside was not allowed to avoid shared responses. Respondents were briefed about the purpose and objective of the study. The confidentiality of students' response was ensured using anonymous questionnaire. Data were cleaned, coded, entered and analyzed using SPSS version 16.0 software and logistic regression model was used to identity predictors of premarital sexual initiation and control confounders. The cut off point for significance level is Pvalue- 0.05 Ethical approval and ethical clearance letter was obtained from the University of Gondar. Wukro education office, preparatory and high school officials were communicated via a cooperation letter from Mekelle University. Respondents were briefed about the purpose and objective of the study and participants' privacy and confidentiality of the information was maintained using unlinked self data collection tool. Verbal informed consent was obtained from each participant to ensure voluntary participation in the study.

Results

Socio-demographic characteristics

A total of 588 students participated in with a response rate of 99,67%. About half of the respondents, 310 (52,7%) were male, whereas 502 (85,8%) of the respondents were in the age range of ro 19 years with the mean age of 17.3+1.89 years Most respondents, 452 (76.9%) were residing in rural while 23840.5%) and 146(24,8%) were grade and 10, respectively. Tigrie in ethnicity; 566 (96.3%) and orthodox followers in religion: 527 (89,6%) were reported. Five hundred fifty nine (95.1%) respondents were single whereas 345 (58,7%) are living with both parents Of the respondents, 314(53,4%) had got regular pocket money from mainly parents 184(58.6%).

Premarital sexual initiation More than a quarter of the total respondents (n-588), 152 (25.9%) of them had history o premarital sexual practice prior to the survey. More than half among sexually active respondents, 83 (54.6%) had initiated sex early 18years) with the mean age of 17:2years and the mean number of sexual partner is 1.92 1.89

Forty seven 30.9%) of sexually active students have multiple sexual partners (38.6% of versus 15.7% of females). A one year du incidence of sexual practice among sexual students (n-152) is reported to be 89(58.6% About two third, 101 (66.45%) of sexually active students were males. Out of them, 14(13.9% had history of sex with commercial sex workers in life time prior to this survey. Among sexually active female students (n-51), 14(27.5%) had history of pregnancy prior to this survey and 5(35.7%) of the pregnancies were not planned whereas among sexually active male students, 21 (20.9%) had impregnated their partners and of these, only 12 (57%) pregnancies were claimed to be planned The predominant reason for initiation of first sex reported by sexually active students is falling in love, while the most common relationship of the first sexual partner is gir friend, 94 (61.8%)

Condom utilization among sexually active respondents

Among sexually active respondents active respondent Among sexually used condom at the first sexual while among those who had recent practice the last practice condom of males who had sex with commercial used condom. Total sex workers, correct and consistent condom utilization reported by sexually active students who had history of condom use in the first sexual initiation (n-86) is The main perceived reasons reported by sexually active students for not using the first sexual practice were trust, urge of first sex and reduced sexual enjoyment with condom use 18 (27.3%), (22.7%) and 9 (13.6%), respectively.

Factors associated with premarital sexual initiation

Socio demographic, parental, and behavioral and influence variables were evaluated using logistic regression model against premarital sex initiation. After adjustment of confounding factors in multiple logistic regression analysis socio-demographic, some parental communication, substance abuse and peer factors were significantly associated with initiation of premarital sexual practice.

Those respondents having less than 18 years were less likely to start premarital sex by 58% compare respondents whose age is greater than 18 years Old IAOR a o 42(o.21, 0.86)l an 8years old students were premarital sex by 67% compared to grade 12 students (AOR at 95% CI 0.33(0.13,0.84)).

Students who discussed about sexual issues with their fathers is 2.20 times more likely fathers heir to compared to those students who didn't discuss about sexual issues with their fathers 95%CI; 2.20(1.26, 3.82)). Those students who had ever alcohol use is 1.74 times more likely initiate premarital than those who did alcohol IAOR at d respondents who had smoked cigarette 5.12 is of times more didn't smoke cigarette IAOR at 95%CI 5.12(1.31.20.01) where as respondents had a habit of bar/night club is 3.27 times more likely to initiate premarital sex than respondents who did not habit of visiting bar/night club IAOR at 95% have a CI. 6.83).

Respondents with peer friends who had pornography film watching habit is 1.91 times more initiate premarital sex than students having pee friends who did not have pornography watching habit (AOR at 95%Cli 1.91 (1.01, 3.5801 and students who had sexually active peer friends 2.89 times more likely to initiate premarital sex tan those students who had sexually inactive peer friends (AOR at 95%Cl; 2.8901.585, 5.28))

However, sex of the respondents, perceived educational performance, ethnicity, religion, regular pocket money, peer discussion about sexual issues, attitude towards the importance of keeping virginity to marriage chat consumption sex film (pornography) watching habit, peer chat, alcohol and cigarette consumption were significantly associated with premarital sexual initiation in crude binary logistic regression analysis, but they became insignificant after adjustment of confounding factors in multiple logistic regression analysis

Discussion

Premarital sexual initiation in this study is to be 25.9%. It is high prevalence when compared to studies conducted in Ethiopia 21.3% (8), 19.4% (9), 11.8% (10) and 20.2% (11) but less than other studies reporting a prevalence of30.8% (12), 32%(13) and 51.3% (6).

The former one shows increasing trend of premarital sex in school adolescents and this may be because of the westerns transfer to third world countries like Ethiopia so that the native culture of the society, keeping virginity up to marriage becoming disregarded as an asset to the future wife husband and this implied that high number of school adolescents are at risk of reproductive health problem including HIV/ HIDS. Among sexually active students, males are higher than females (66.45% versus 33.55%) It is consistent with large proportion of males who initiated premarital sex (2.1% versus 29.9%) society influence; females are maintain their virginity up to marriage than males. So, females may under report their sexual experience and /or males are at higher risk of reproductive health problems.

The mean age of premarital sex initiation of this study population is 17 year and more than half 54.6% of sexually active student had started fi ex early (<18years). This is higher compared with he other studies 15 years and 16 years (10, 14); but less than the study 19 years (15). This may be an indication of achievements of the national Adolescent and Youth Reproductive Health (AYRH) program despite the Ethiopian national family law that describe the legal marriage age for both sexes is 18 years (3, 7). This study showed that sexually active males are higher than females (32.6% versus 18.3%). This is not in line with other study findings, male 18% and female 22% (16), and male 50.3% and female 33.5% (17) Among sexually active students, 30.9% had multiple sexual partners (38.6% males and 15.7% females). It is lower than other study findings, 56.4% and 53.1 (9, 18). This may be because of cultural influence in our country especially in the study area, females are expected to maintain their virginity up to marriage and/or be loyal to their spouse/husband. This implied that large segment of males are engaged in premarital sex with multiple sexual partners than females.

The proportion of condom utilization at the first sexual intercourse among sexually active students in this study is 56.57% and condom utilization for the last 12 months among ever condom used students who had sex in the last 12 months is 60.7%. This is higher than the other studies when compare to even condom utilization and recent condom use 42% 48% (13) This is probably adolescent health in the country got emphasis than ever before and improved awareness about mode of transmission and protection modalities of sexually transmitted injections sexually transmitted infections including HIV/AIDS. Proportion of total correct area consistent condom use among sexually active students who had ever condom use at the first this study population is 58 l% which is compared with other study 57% (15).

The main perceived reason for non condom utilization is partner trust; but 30.9% of the sexually active students had multiple sexual partners. So partner trust may not work for non condom users and they are at risk of exposing for different reproductive and sexual health problems including HIV/AIDS.

A student whose age is less than 18 years is A student whose age is less protective against premarital sexual initiation than those students whose age is greater than 18 years. his finding is consistent with other study findings that young age is protective factor to premarital sex This implies that older students have a high likelihood of initiating premarital sex and associated productive health problem than younger students.

In this study, substance abuse like alcohol consumption and cigarette smoking are risk factors for initiation of premarital sex. This is in agreement with other study findings (4, 12). This may be due to intoxicating power of the substances that alter the decision making ability of students and deriving them to initiate sex.

Likewise, night club/bar visiting habit of the respondents and having peer friends who had sex film (pornography) watching are predictive factors to initiate premarital sex. This in turn probably the visual impulsive nature of sex flm motivates students to imitate things obse Similarly, respondents who have sexually a peer friend have a high likelihood of initiating premarital sexual practice.

This finding is in line with other study findings sex may put students at high risk of reproductive health related problems. A considerable number of students are engaged in early premarital sexual initiation with high proportion of males and one third of sexually active respondents had multiple sexual partners but total correct and consistent condom utilization among sexually active students is low in relative terms. This reflects that students are at higher risk of RH problems including HIV/ AIDS. Age, substance abuse and peer pressure are important predictive risk factors of premarital sexual initiation. Sexual and adolescent RH the school in education should be include curriculum at all levels to equip students about RH and healthy sexual initiation.

The need to strengthen age and gender based IEC/BCC services about sexual and RH in general and premarital sex in particular within the school environment is recommended. The school administrators and teachers should take the initiative to bring about healthy sexual behavior among students by establishing and strengthening RH clubs in the schools.

Delaying sexual initiation and maintaining virginity up to marriage and being loyal to a single spouse should be promoted by the community elders and religious leaders. Large scale study including out school and rural adolescents triangulated by qualitative method is recommended for future study.

Acknowledgement

We would like to thank Wukro district education office, Wukro preparatory and high school staffs. Last but not least, we would also like to thank study respondents at large.

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alth Democratic Republic of Ethiopia, Ministry of Health: National Adolescent and Youth Reproductive ORC, statistical Agency Ethiopia Demographic and Health survey 2005. Addis Ababa, Ethiopia and Macro Calverton, Maryland, USA: September 2006 ederal Democratic of Ethiopia, Ministry of Health: National Reproductive Health Strategy 006 2015, March 2006 Federal Democratic Republic of Ethiopia Population Census Commission. Summary and Statistical Report o the 2007 Population and Census. December 2008, Addis Ababa. ukro Education Office of the Registrar, 2009/2010 academic year Fekadu Mazengia, Alemayehu Worku. Age at sexual initiation and factors associated with it among youths in North East Ethiopia. J. Health Dev. 2009 23(2): 154-162 Federal Democratic Republic of Ethiopia (FDRE) The Revised Family Code: Federal Negarit Gazetta Extra dinary The Revised Family Code Proclamation No. 213/2000. Addis Ababa: 4 Day of July, 2000 s Assefa seme, Dessalegn Wirtu. Premarital sexual Adolescents in Nekemte Town, East Practice among Schoo Wollega. Ethiop Health Dev. 2008, 22(2): 167-173 Daba Bane Fury. Assessment of premarital sexual practices and factors related to it among Ambo high school students. Addis Ababa Post Graduate Electronic Library, June 2006 A.A lo. Mulegeta Alemayehu. Assessment of the prevalence of premarital sex and unprotected sexual practice among deo zone high school students SNNPR, Ethiopia, 2006. Addis Ababa Post Graduate Electronic Library June, 2006 A A 11. Nassir Ibrahim. Factors that Influences School Adolescents Exposure to HIV/STD in Bale, Oromia Region, May 2004 Addis Ababa. 12, Hong Yan, Weiqi Chen, Haocheng Wu, Yongyi Bi, M aoxuan Zhang, Shiyue Li and Kathryn L Braun Multiple sex partner behavior in female undergraduate students in China: A multi campus survey. BMC Pub lic Health 2009, 9:305 doi: 10.1186/1471.2458 305

l Electronic Library 12 ong Yan, Ababa. olescents Exposure to HIV/STD in Bale, Oromia Region, Multiple Weiqi Chen, Hao cheng Wu, M aoxuan Zhang, Shiyue Li and Kathryn L Braun. lic sex partner behavior in female undergraduate students in A multicampus BMC Pub Health 2009, 9:305 China: Ka doi: l-2458-9.305 13 Method R zaura and ory C Masaru. Sexual practices among unmarried adolescents in Tanzania. BMC Public Health 2009, 373- doi: 24589.373 4. Lee L K, Chen P C Y, Lee K, aur J. Premarital sexual intercourse among adolescents in Malaysia: a cross- sectional Malaysian school survey. Singapore Med J 2006, 47 (6) 476-81 15. Onja Holisoa Rahamefy, Michele Rivard, Madeleine Ravaoarinoro, Lala Ranaivoharis Andriamiliharison Jean R Richard Morisset. Sexual behavior and condom use among university students in Madagascar. Journal of Social Aspects of HIV/AIDS, 2008, 5(1) 2835 16. Adesegun O., Fatusi and Robert W um. Predictors of early sexual initiation among a nationally representative sample of Nigerian adolescents. BMC Public Health, 2008: 8:136 17. Clifford odimegwu. Influence of Religion on Adolescent Sexual Attitudes and Behavior among Nigerian University Students: Afr] of Reprod Health, 2005; 9(2): 12540 18. Anteneh Melesse Ayele. Reproductive health risk and sexual behavior among adolescent in Mojo preparatory and high school students, in Mojo town, East Shewa, Oromia region, June,2008 19. Ronny A. Shtarkshall AE Sara Carmel E Dena Jaffe-Hirschfield AE Anna Woloski wruble. Sexual Milestones and Factors Associated with Coitus Initiation Among lsraeli High School Students. Arch Sex Behav DOI 10.1007/s10508-008-94 18x

ORIGINAL ARTICLE

Sexual behavior of university students in Ethiopia the case of Samara University

Abstract

Background: it is well documented that college students are practicing risky sexual behaviors globally, studies conducted in high school and few former Ethiopian universities have documented increasing sexual activities among youth. However, there is lack of study about the sexual behavior of students joining newly established universities help to fill the existing information pup and proside data to take immediate evidence based action.

The objective of dhe Dady wau to assas the nsky Manual behouour and factom Iasially transmitted in STI) including HIV/AIDS among Samara University student Arethode The unruly conducted in Samara Uniersin, Ethiopia from Nov. 10, 2009 Jan10 2010 oats onal study desim. Questionnaires uerr to *22 randomly a University fono roup documents and duee interieus th key inform nt uere also conducted with purposively selected mat student' dean, studenu' dinie head and undent' council prendent, respectively. Descipour and lots analysis with 95% confidence interali uere used Qualitatiue data were transcribed, translated, and selected thema,

Results: out of the total respondents 186047.9%) of student had sexual experience of the 186 had student, 112 (43,4%) were male and 74058,7%) uere female (p 0.002) In this study, 54.3% of student had sex in the previous one year whereas 27.7% of them had more than one sexual partner, 723 had unplanned unwanted sex, 55.6 had visited commercial sex workers and 45.7% of the students had sex in exchange for money or gifts in the past one year. Gender, risk perception and having multiple sexual partnerships have found positive association to have had Female wee 4 times more likely to have sex than males (9 (1.72, 159). STI including HIV/AIDS risk perception is a strong predictor of having sex in the last 12 months and multiple sexual partnership (AOR-9 1: 95%cl, (2.59. 31.93, AOR-looses 2.ToJ7 78, respectively.

Conclusion: The study population non are vulnerable to STI including HIV because of their sexual behavior, sexual and reproductive health services to reduce risky sexual behaviors and to promote productive health education should be designed and improved for university student specially in the universities established in the rural setting Like samara University (Ethiopian Journal of Reproductive Health, 2012,60lh

Background

Addressing the sexual and reproductive health (RH information and service needs of youth especially in the university settings poses significant challenges and service providers especially king in poor settings (1). (The fact the adolescents and other young persons are disproportionately affected by the RH problems such as abortion. sexually transmitted infections including HIV/AIDS draws attention to the of appropriate interventions (2) Adolescents also one of the groups HIV/AIDs. over half of all new HIV infections in in were among young persons aged 14-25 years hit being young women (3) given the assumption that the majority of university students are between 14 and 25 years of that their community might be vulnerable HIV infection through sexual risk-taking conducted in Ethiopia revealed that University students have been recognized as a population at risk for HIV infection (4, 5). Risky sexual experiences, peer influence and the use of illegal alcohol and drugs were behaviors of university students that have made them potentially vulnerable to infection (4). Furthermore, perceived low vulnerability to HIV/AIDS infection is associated with unprotected sexual practices a college students (5)

In Ethiopia, the number of public higher the total number of students enrolment was growing rapidly (6). The majority of the students of higher institutions fall in the youth age category. Studies conducted about Ethiopian you the showed that majority of risky sexual behavior and exposed to RH problems that include gender inequality, sexual coercion, STI including HIV/AIDS unwanted and abortion Some of these students usually tend to get involved in drinking alcohol and chewing khat that may expose them for involved in risky sexual behaviors (1, 8, 10). However most of these studies are limited to high school youth and provide information on urban settings.

Students in higher institutions are different from other youth, as they are confined in separate new compounds away from their residence. They also lack parental supervision; don't have information about where to go to get services they need and don't have the money as well as the time to go outside for getting RH services. However, there is less action taken to address the special needs of these groups separately (9, 10, 11)

In light of such issues, addressing the sexual behavior and RH service needs youth are important. This situation calls for urgent policy and programmatic shift in universities especially in the settings of emerging universities that established in areas with poor effectively address young people's To universities, RH needs in the understanding is important have better of the various aspects of people, Little risky sexual behaviors or young behaviors has been explored about the sexual behaviors die Nesal in the and RH service needs of young people context of higher education institutions in Ethiopia in general and in Samara University setting in particular.

The purpose of this study was to assess sexual behaviors and factors contributing wisky sensual behavior which predispose for sms including HIV/AIDS among Samara University students. The findings generated from this will as evidence to health planners that work on youth RH issues which could lead to bener designed, better directed and more targeted intervention programs.

Methods

Across- sectional survey supplemented with focus group discussions (FGDs) and service providers' interview was conducted in Samara University from Nov 10,2009 to Jan 10,2010. Samara university in one of the 13 newly established Ethiopia in 2008 it is found in Samara town of Afar regional state in the Ethio-Djibouti main high way. As compared to the other universities in Ethiopia, Samara University was established in an area that is hot with average annual temperature of 35 degree centigrade, addition, is an where there a corresponding accumulation of risk factors favoring the rapid spread of the HIV virus such as the presence or high way crossing the region, growing farming and mining sites.

As compared the other universities in Ethiopia, Samara University was established in an area that is hot with average annual temperature of 13 degree centigrade, ln addition, it is an area where there is a corresponding accumulation of potential risk factors favoring the rapid spread of the virus such the presence of high way Crossing the region, growing farming and mining sites.

study population was students of Samara University who attended their education in the 2009/10 academic year. The sample size was calculated to be 422 using 95% CI and p 53.7 Accordingly, a representative sample of students from the university were selected by proportional stratification of students in year of study as shown in Table 1.The 422 study participants were selected from each year of study by simple random sampling technique considering the male to female ratio in the respective year of study in the university.

The FGD participants were selected purposively considering sex, year of study and communication skill with the help of student representatives. Each FGD consisted of on average of seven participants. A total of 6(3 male and 3 female) Ds were conducted. Moreover, interview with student dean, student clinic heads and student council president were also conducted.

Table 1: sample size allocated for each year of study by sex

	Total population	Sampled population
1st year	Total = 1288	Total = 194
	Male = 817	Male = 123
	Female =471	Female =71
2nd year	Total = 651	Total = 98
	Male =412	Male =62
	Female =239	Female =36
3rd year	Total =863	Total =130
	Male =551	Male =83
	Female = 312	Female = 47

For the cross survey, an anonymous, sectional pretested, pre-coded questionnaire was questionnaire was d. The designed prepared based on reviewing the available literatures on similar studies. It was translated into Amharic and put in with the English version to have a better understanding of the questions by the students. The qualitative data from the students were collected using a FGD guide that consisted of open-ended questions related to the research objectives and the interview was tape recorded. The guideline was adapted from WHO instrument Ill guidelines for FGD with school going young people. The most important findings were incorporated into this report To collect information to describe the RH service needs of the students interviews with service provider was conducted. A semi structured interview form was adapted from WHO instrument VIll The dependent variables of interest were sexual behaviors and RH service needs while the independent variables were categorized into socio demographic & economic variable (sex, age, marital status, pocket money, membership to youth club, year of study, peer pressure and behavior), personal factors like perception, smoking status, khat, alcohol use and drug use.

Operational definitions al behaviors (practice): in this pa sexual behavior represents those sexual practices of ever had sex, sexually active in the 12 months number of sexual partners in the last 12 months, inconsistent condom use, have sex with non-regular partner or exchange sex money for sexual under the influence of substances alcohols. Reproductive health services in this study Rh services are defined by services related to family planning, STI HIV service and care as well information and counseling and education services related to RH. Youth: In this study, youth is defined as the people between age 15 and 24 years and youth, adolescent and samara university students (considering most of the students are in this range) are used interchangeably Sexual activity ever had sex: Relation of two youth, this involves penetrative sexual intercourse. It is synonymous with the expressions like sexual experience and has had sex that is used in this paper Currently sexually active: Those sexually active youth who practice sex within 12 months prior to the date of data collection.

substance use: Youth who alcohol, chew khat, cigarette regardless of the amount frequency of use d The quantitative data was checked for completeness and At the same time some open ended questions of the survey were filled consistencies. and were post-coded/ for recoded computerization The data entry and cleaning were done info version 3.5.1 and analysis were d by SPSS version 16.0 statistical packages by the principal investigator. Descriptive statistics, bivariate and multivariate techniques were applied to identity the factors associated with the sexual behavior of students. Chi square test was used to test an association between the variables. The variables that were significant at the bivariate level were re-examined in the multivariate analysis (Binary logistic regression) in order to identify the independent predictors after controlling for other variables OR with 95% confidence intervals were used to compare or see the effect of those determinant factors.

he qualitative data as generated from the FGDs were reviewed based on the main themes of the discussion by the facilitator and note taker. They summarize patterns of responses and confirm consensus or conflicts that emerged from the participants. The audio tapes were transcribed first in Amharic and then translated into English. Responses were analyzed by arranging them in the general categories identified in the discussion guide After the responses were arranged, the different positions or opinions were identified. Then, the various opinions were summarized the degree of consensus were assessed or differences expressed by the groups were summarized in the report based on the identified themes. In this report those findings which were not collected by the quantitative survey (i e supplementary to the quantitative) part were incorporated

All the recorded interviews that were conducted with service providers were also transcribed. Data analysis was done manually. Transcripts were hand coded using a provisional coding list that is developed from the guide lines (Ref and those that were emerged during data collection. Codes then revised through an interactive process of reading and rereading the transcripts. Coded data were examined for similarities and differences between he service providers.

The analysis was made focusing on emerging patterns by identification of the domains of responses and answers were grouped accordingly. The study protocol was approved by the College of Health Sciences School of Graduate Study of Haramaya University and then by ethical review committee of Haramaya University College of Health Sciences. Information on the study was given to the participants, including purposes and procedures, potential risk and benefits. It was explained that participation were voluntary and private information were protected. Informed consent was obtained from each participant. In order to protect the confidentiality of the information, names or ID were not included in written questionnaires.

Results

Socio- demographic characteristics and some personal habits/practices A total of 392 students participated in the individual questionnaire survey with a response rate of 92.89%. As indicated in Table 2, out of the total 392 study respondents who filled the questionnaire correctly, 258 (67.0 were male (33.0 were female at the time of survey. The mean age was 21 with a SD of t1.58 years, in a range between 17 and 27 years. With regard to school type, they previously attended their last level of education; the majority (74.7%) attended a public/government high school With regard to personal habits, the majority of the students (78.6%) did not smoke while 19.9% of the students smoked occasionally. Among the smokers, 30% started smoking after joining the university. Nearly two-third of the respondents 65.3%) and 81.9 of the students stated that they never used alcohol and chat, respectively. From those who chew chat, half of them started chewing chat after joining the university. With regard to illegal drugs, 11.7% of students in the university replied that they were substance users at the time of the survey. As the finding shows more than half (53.9%) of the study participants have ever been a member of any youth clubs

Table 2: Logistic regression analysis of sexual behavior of Samara University students by selected factors from Nov., 10, 2009 to Jan., 10,2010

Variable	Frequency	Percent
Sex (n=385)		
Male	258	67.0%
Female	127	33.0%
Former Residence (n=383)		
Tigray	107	27.9%
Amhara	130	33.9%
Oromia	66	17.2%
SNNP	56	14.6%
Afar	12	3.1%
Other	12	3.1%
Religion (n=386)		
Protestant	45	11.7%
Catholic	25	6.7%
Muslim	104	27.2%
Orthodox	212	54.9%
Other	2	0.5%
Ethnicity (n=389)		
Oromo	80	20.6%
Amhara	136	35.0%
Tigre	104	26.7%
Afara	50	12.8%
Others	19	4.9%
School type (n=385)		
Public high school	293	76.1%
Private high school	92	23.2%
Pocket money (birr) (n=372)		
<100	149	39.6%
101-200	161	42.8%
>200	66	17.6%
Year of study (n=389)		
Year 1	183	47.0%
Year 2	87	22.4%
Year 3	119	30.6%

Sexual behavior of Samara University students Out of the total respondents, 186(47.9%) of had sexual experience. Of the 186 sexually experienced students, 112 (43.4%) were male and 74 (58.7%) were female (p-o.002). From the 186 sex ally rienced respondents, 129(69.8%) had rst penetrative sex before joining the ani ersity and the rest 57(30.2%) after joining the ity. Among the respondents who had sex oining the university, 4171.9%) had their first in the university compound and the rest 16 (28.1%) outside the university compound. Most of the focus group participants from male and female groups agreed that students in the university were sexually active. Some of the participants said "sex is the fourth basic need" and those that did not have sexual experience can be taken to have some mental or social problem. However, the range of estimation forwarded by the participants about the proportion of sexually active students was different. However, the majority's estimate was within the range of 20% to 60% and except one first year female FGD group, all the discussants agree that the majority of female students were sexual lly active when compared to male students.

Age at first sexual intercourse varied and inconsistent, with the highest percentage having sex at age 19 years. The mean age of sexual initiation was 18 years with SD of t 1.58 years overall 18.15 for male and 17.5 years for female students. Moreover, the FGD result that was conducted separately confirmed that female start (15 years) than sexual intercourse at earlier age their male counter parts (18 years) The study showed that, 101(54.3%) students had sex in the previous one year. before the survey with spouses (25.5%), boy/girlfriend (28.4%), teacher (17.6), construction workers in the university (6.9%), and commercial sex workers Table 2). The first and second year FGD participants agreed that students are less sexually active and their reasons were academic burden, financial constraint and their maturity The opposing groups mainly third year students mentioned that having sex does not take long time and financial issues are not hindering students from having sex in campus. They state some of the girls

are invited to have sex and sex is taken as a fun and modernization of the by most students.

Table 2: Logistic regression analysis of sexual behavior of Samara University students by selected factors from Nov., 10, 2009 to Jan., 10,2010

Sexual Behaviors	Male (%)	Female (%)	Total (%)
Had sex (n=185)			
Yes	61(55.00)	40(54.1)	101(54.6)
No	50(45.0)	34(45.9)	84(45.4)
Had sex with in the past one year			
Spouse	14(220	12(30)	26(25.5)
Boy/girls friend	20(32.3)	9(22.5)	29(28.4)
Teacher	4(6.5)	14(35.0)	18(17.6)
Construction worker	4(6.5)	5(12.5)	7(6.9)
CSW	17(27.4)	0(0.0)	17(16.7)
Others	2(3.2)	0(0.0)	2(2.0)
No of sexual partner			
One	43(69.4)	30(75)	73(72.3)
More than one	18(30.6)	10(25.5)	28(27.7)
Visit CSW			
Yes	35(50.7)	25(64.1)	60(55.6)
No	34(49.3)	14(35.9)	48(44.4)
Receive money /gift in exchange for sex			
Yes	22(33.8)	26(65.0)	48(47.7)
No	43(66.2)	14(35.0)	57(54.3)
Drunk alcohol while having sex			
Yes	33(49.3)	25(61.0)	58(53.7)
No	34(50.7)	16(39.0)	50(46.3)

The students were al asked whether they had than one sexual partner during the past one The study lowed The sexually active students that 28 (27.7%) of the more than one sexual in the last one year had partner About 73072.3%) of the sexually active students had unplanned unwanted sex. It is similar with the result of the FGD in which most of the participants mentioned sex in their campuses is causal as they see students coming out of the library or from their dormitory at night and have sex in the sport fields and other darker places in the campus Sixty (55.6 of the sexually active male participants had visited commercial sex workers (CSWs) in the past one year. Out of the sexually active students in the last one year before the study period, 58(53.7%) admitted that they or their partner were drunk when they had sex. Fifty (53.3%) of the sexually active students in the past one year claimed that they have used condom consistently Contrary to this, the participants of FGD from third year male participants agree that majority of the sexually active students did not use a condom consistently even when they had sex with CSWs The trusts they have for each other, absence of readiness before embarking into sex, the poor knowledge and shyness especially for students that have their first sexual contact, unavailability of condom in the compound especially during evenings were reasons for not using condoms.

Factors contribute to Sexual Behaviors When the sexual behavior of students stratified sex female students were more experienced than male students i.e. 73.7% of females out of 127 female respondents and 60.2% males out of the 258 male participants (p-0.002) Female students were 4 times more likely to have sex than male students (95%Cl: (1.72, 11.59) which confirm in this study that sex is a predictor for ever had sex.

The study showed that the sexual behaviors of students varied by the number of years of study i.e. those who ever had sex include: 43.7 69.0% and 39.0% year one, year two and year three students respectively. Taking year one students as a reference, second year students were more likely to have sex CAOR 6.70, 95%CI, 2.00, 21.8).

The percentage of students who drank alcohol and ever had sex was nearly two times when compared with students who did not drink alcohols currently and had sex. Alcohols drinking is strongly associated with ever had sex (AOR-4.16). When we see the rate of consistent condom use the proportion is greater for those who were a member of any youth club and it is significantly associated with ever been a member of any youth club (OR 1.96 at 95%Cl (1.25, 3.02)

Table 3: Logistic regression analysis of sexual behavior of Samara University students by selected factors from Nov., 10, 2009 to Jan., 10,2010

Variables	Consistent condom use Crude OR (95% CI)	AOR (95% CI)
Sex		
Male	1	1
Female	1.86(1.21,2.86)	4.46(1.72,11.59)
School type		
Public	1	1
Private	1.01(0.62,1.67)	0.93(0.32,2.69)
Pocket money		
<100	1	1
101-200	1.05(0.66,1.59)	055(0.13,1.33)
>201	0.54(0.30,0.98)	0.38(0.12,1.19)
Academic year		
Year I	1	1
Year II	2.86(1.68,4.91)	6.61(2.00,21.8)
Year III	0.82(0.51,1.32)	0.74(0.29,1.91)
Smoking status		
No	1	1
Yes	1.63(0.98,2.69)	0.42(0.9,1.90)
Drinking status		
No	1	1
Yes	2.75(1.77-4.27)	4.16(1.53,11.50)
Chat Chewing		
No	1	1
Yes	1.92(1.13,3.30)	3.25(0.71,146)
Ever had HIV test		
No	1	1
Yes	1.37(0.91,2.04)	1.55(0.69,3.51)
Received peer pressure		
No	1	1
Yes	3.83(2.51,5.88)	2.86(1.29,6.40)
Best friend had instated sex		
No	1	1
Yes	0.33(0.20,0.54)	0.39(0.18,0.88)
Male close friend had sex CSW		
No	1	1
Yes	0.39(0.23,0.64)	0.46(0.21,1.04)
Risk perception		
No/Low	1	1
High	3.80(2.31,6.26)	3.98(1.65,9.63)

Students who had peer pressure to have sexual friends already Intercourse and those who had more likely to engaging in l intercourse were (AOR 2.86 sexual have Sexual experience 11.29.6.40] AOR-3.9011.18, 13.60), respectively. The odds of individuals with peer pressure to have multiple sexual partner is three times more when compared with individuals who have no peer pressure (AOR-3.615 95%Cl, 1.43, 9.09). Most of the focus group participants also noted that their peer pressure group in the dormitory was first point of entry into the world of sex. Peer encourage the viewing of pornographic materials and engaging in sexual acts. All the male discussants mentioned that they learned how to visit the beer shops, nightclubs and practice sexual intercourse from their friends this indicates that peers seemed to have a great influence on the sexual behavior of participants.

The majority of students (83.0%) who claimed at high risk of contracting STI including H had had sex and it is found as a predictor for having had sexual intercourse (AOR- 95% 3.98, CI, 9.63). The result depicts that risk perception is a strong predictor of had sex in t last 12 months and multiple sexual partnership (AOR 9.1; 95%CI, (2.59, 31.93, AOR-10.015. 95%CI, 2.70-37.78), respectively. Most of the focus group discussants also admitted that they are more exposed to sexual activities and of course to HIV infection.

Table4: Logistic regression analysis of sexual behavior of Samara University students by selected factors from Nov., 10, 2009 to Jan., 10,2010

Variables	Consistent condom use Crude OR (95% CI)	AOR (95% CI)
Sex		
Male	1	1
Female	1.04(0.57.1.87)	1.52(0.49,4.96)
School type		
Public	1	1
Private	0.80(0.39,1.65)	0.92(0.21(4.01)
Pcket money		
<100	1	1
101-200	0.2(0.05,0.72)	057(0.18,1.83)
>201	0.12(0.03,0.44)	21.0(1.89,234.4)
Academic year		
Year I	1	1
Year II	0.92(0.47,1.88)	0.87(0.23,0.3.1)
Year III	0.56(0.27,1.18)	0.32(0.07,1.34)
Smoking status		
No	1	1
Yes	1.69(0.84,3.38)	1.07(0.23,4.91)
Drinking status		
No	1	1
Yes	1.34(0.78,2.52)	0.81,(0.26,2.59)
Chat Chewing		
No	1	1
Yes	2.75(1.29,5.94)	3.89(0.83,17.94)
Ever had HIV test		
No	1	1
Yes	0.88(0.50,1.57)	1.10(0.34,3.62)
Received peer pressure		
No	1	1
Yes	1.17(0.62,2.21)	1.11(0.34,3.55)
Best friend had instated sex		
No	1	1
Yes	0.54(0.27,1.07)	0.47(0.15,1.40)
Male close friend had sex CSW		
No	1	1
Yes	085(0.43,1.68)	3.90(1.18,13.60)
Risk perception		
No/Low	1	1
High	5.62(2.87,11.0)	9.1(2.59,31.93)

Almost all of the participants said their freedom to act the way they like is the reason for their exposure. The participants said they were under the control of their families before. Now they can take alcohol and drugs and can spend the night anywhere they like. Contrary to this, fresh female participants opposed the idea as they had no sex after joining the university.

Discussion

The result of our study showed that nearly half of the study participants had sexual experience. Out of the total respondents, 186(47.9%) of students; 112(43.4%) male and 74(58.7%) female (p=0.002) students were sexually experienced. The majority among those sexually experienced respondents, 129(69.8%) had their first penetrative sex before joining the university and the rest 57(30.2%) after joining the university.

Table

5: Logistic regression analysis of sexual behavior of Samara University students by selected factors from Nov., 10, 2009 to Jan., 10,2010

Variables	Consistent condom use Crude OR (95% CI)	AOR (95% CI)
Sex		
Male	1	1
Female	0.78(0.43,1.40)	0.67(0.25,1.81)
Scholl type		
Public	1	1
Private	1.02(0.49,2.10)	089(0.34,2.32)
Poker money		
<100	1	1
101-200	0.69(0.27,1.77)	0.94(0.33,2.71)
>201	0.56(0.22,1.42)	1.33(0.30,5.80)
Academic year		
Year I	1	1
Year II	0.91(0.46,1.79)	1.22(0.39,3.86)
Year III	0.94(0.45,1.96)	1.17(0.33,4.22)
Smoking status		
No	1	1
Yes	1.1(0.53,2.32)	1.40(0.25,4.22)
Drinking status		
No	1	1
Yes	1.19(0.66,2.14)	0.92(0.35,2.43)
Chat chewing		
No	1	1
Yes	0.97(0.48,1.98)	0.34(0.08,1.8)
Ever had HIV test		
No	1	1
Yes	0.67(0.37,1.20)	2.32(0.84,6.37)
Perceived peer pressure		
No	1	1
Yes	0.61(0.32,1.16)	0.74(0.26(2.20)
Best friend had instated sex		
No	1	1
Yes	2.00(0.97,4,01)	1.36(0.52,3.61)
Male close friend had sex CSW		
No	1	1
Yes	1.03(052,2.03)	0.78(0.29,2.10)
Risk perception		
No/Low	1	1
High	1.32(0.71,2.43)	2.56(0.90,7.22)

Among the respondents who had sex after joining the university, 41(71.9%) had their first sex in the university compound and the rest 16 (28.1%) outside the university compound. The proportion of the students who had sex is consistent with a study conducted with hawassa university students but inconsistent with the findings from Bahir Dar students Sexual experience (12, 13).

The proportion of respondents who had sex in the university compound among the students who had sex after joining the uni9versity in greater than the finding from Hawassa university students, which showed a high prevalence of sexual activity in the Samara University compound. This difference may be due to the location of the university, with is far apart from the nearby town (logia).

The loose security system and the poor infrastructure (the absence of light for the majority of the compound) may be another reason which aggravate the situation More than half the study respondents have had sex in the last one year before the data collection When compared with other studies the one year prevalence of sexual activity of Samara University students is higher rhan Indian students and Turkish university students and lower than the study findings from South Africa and US university students (14, 15). On the other hand these figures are far from the findings on in-school youth of the

second national behavioral surveillance survey (16) which showed the increased trend of sexual practice, with time and age

As the quantitative and qualitative findings of the h showed, the majority of students were engaged in unsafe sexual practices. compared to t studies conducted on university students our country (17, 18) and other countries (15) the prevalence of unsafe sexual behavior is very high. is a major concern to note that Samara university students are at high risk for sexual and RH problems. The high one-year prevalence of sexual activity and unsafe sexual practice can be attributed to the high freedom students have when they in the university campuses, the longer time spend with the opposite sex, and the conducive environments as mentioned in the qualitative findings that are facilitating sexual practices the high prevalence of unsafe sexual behaviors of students, 53.3 of the sexually active students used condom in the previous one year which was very different from the 8% reported condom use among South African students 19) among Madagascar students 5). The result was not much different from 51.9%, 52%, and 60.0% reported condom use among Turkish Bahir Dar and Gondar university students, respectively (13,15,17).

Sexual behavior studies elsewhere and in Ethiopia had shown that the use of alcohol increases the likelihood of engaging in risky sexual behavior (21-23). The results of this present study support this finding. It was assumed that peers and friends consider consumption of alcohol as an activity that is mostly influenced them to engage in sex. As the results revealed, drinking alcohol was a significant predictor for students' sexual behavior. This could be a high risk factor for early initiation of sexual behavior due to lack of a specific reasoning process. Young people may use alcohol as a strategy to obtain sex; it therefore has a negative impact on judgment, inhibition and physical coordination and its association with reduced condom use.

The present study found that the effect of peer sexual behavior increases the likelihood of having risky sexual behaviors. The finding is consistent with studies conducted elsewhere (24, 25) and inconsistent with other studies conducted on youth sexual behaviors and factors associated with it risky 28). There is more evidence that in all societies, model for individual behavior peer behavior and this is certainly true in matters of adolescents (29) and youth sexuality (29).

Sometimes, peer pressure upon a person can provoke students to engage in sex through associated such as drinking and visiting prostitutes G). Sensitive issues such as sexuality are difficult to discuss among family members but it is easier to discuss among peers. Therefore, the impact of peer group plays the great role to influence views, attitude and sexual behavior of individuals As university students are the future of the country, they not only need RH information but also RH services. Both the quantitative and qualitative findings from their own and service providers confirm the student side demand for RH services like STI diagnosis and treatment, voluntary counseling and testing VCT and family planning methods including condom. Some of the students that disagreed with providing information and education in-campus might think either they have adequate knowledge on the topic or educating students will lead to activity that is more sexual. On the contrary, review of more around the world than 50 sex education programs and nao exhaustive reviews of studies conducted by WHO and the US National campaign to Pre vent Teenage Pregnancy proved the opposite is true. Effective RH HIV education in schools can result in delaying first intercourse or, if young people are already sexually active, increasing use of contraception (29) Most of the students are at fire age and faced different RH problems, the students demand of RH service is unquestionable.

This study had some limitations. First, its cross-sectional design was limited in assessing cause-and-effect associations. Second, the results obtained in this study should not be generalized to all Ethiopian university students, since our sample was limited to university students within one region and socio demographic or socio-economic characteristics are greatly diverse among regions in Ethiopia. In conclusion, the study population are vulnerable to STIs including HIV because of their sexual be- heavier. RH services to reduce risky sexual behaviors and to promote RH education should be designed and improved for university students especially in the universities established in the rural setting like Samara University.

Acknowledgement

We are grateful to the Ethiopian Ministry of education for sponsoring this research as part of the partial fulfillment of master program. In addition, we would like to acknowledge all individuals and institutions in Ethiopia who were involved in the implementation of the research project.

References

1. Addis Ababa University & US CDC Global AIDS program Ethiopia. Modeling and reinforcement to Combat HIV/AIDS (MARCH) 200. AAU Office the vice president of Graduate programs and research. Addis Ababa
2. UNAIDS. WHO AIDS Epidemic Update: the joint United Nations Programmed on HIV/AIDS and the world health organization: Geneva.2007
3. Amar Krnekar, Manoj Sharama: Determinants of Safer Sex Behaviors Among College Students. Acta Didatica Napocensia, ISSN 2065-14306(1),2010
4. Ma Q, One Kihara M, Cong L, et al. Early Initiation of sexual activity a risk factor for sexually transmitted diseases, HIV infection, and unwanted BMC public Health 2009; 9:111
5. Onja H.R Michele R. Madeleine R. Lala R.etal Sexual Behavior and condom use among university students in Madagascar. Journal of Social Aspects of HIV/AIDS. 2008; 5(1);28-35
6. Ethiopian Ministry of education educations statistics Annual Abstract, Addis Ababa ministry of Education.2009
7. Gonindasan Pav et.al, Youth Reproductive health in Ethiopia, Calveton, Maryland: ORC Macro, 2002.
8. United Nations Population Fund (UNFPA), Population, Health and Socio-Economic indicators/policy Development, 2006
9. Aluede o, Imlonde H, Eguavoen A Academic, career and personal needs of Nigerian University students, Journal of instructional psychology, 2006.;33(1):50-57
10. Consortium on Reproductive Health Association (CORHA). Assessment of the reproductive health situations/problems of students in the Addis Ababa, Bahirdar, Jimma, and Mekele Universities, 2005.
11. Molla MaBirhane Y, n. erception of Ethiopian youth regarding their risk of HN community based study among youth in predominately rural Butajina. Ethiopian Journal of Reproductive Health, 2009, 3(3):44:51
12. UNICEF and Geneva Global. University RH HIV&AIDS intervention project SYGE Present on main streaming of HIV/AIDS in higher institutions of Ethiopia. Adama. 2009
13. Amalu s Reponses to HIV/AIDS prevention messages based on the extended Parallel process model. among Bahir Dar University students, Norh West Ethiopia, MPH thesis AAU 78p, 2004
14. Peltzer K. Nzewi, E., & Mohan, K Attinudes towards HIV antibody testing and people with AIDS among university students in India, South Africa and United States. Indian journal of Medical Sciences. 2004; 58. 95-108.
15. Zahra Golbasiand Meral Kelleci sexual experience and risky sexual behaviors' of Turkish universitystudents:http://www.springerlink.com/content/100399/p=e4f239f205f9449a833b283 23457977d & pi=0. 2010
16. Federal Ministry of health (FMoH) HIV/AIDs Behavioral Surveillance Survey (BSS) Ethiopia, Round two. MoH. Addis Ababa, Ethiopia. 2006
17. Ethiopian Public Health Association. Intention to use condoms and remaining faithful in student at Gondar University EPHA sponsored Masters thesis publication; 2006
18. Yordanose B. Reproductive health needs and service utilization of Addis Ababa university students' .MPH thesis, 2008.
19. Eaton L -Flisher AJ, Aaro LE. Unsafe sexual behavior in South African youth. Soc Sc Medi 2003; 56: 149-65
20. Martin, J. L. Drinking pattern and drinking in community sample of Gay men, Division of socio-medical problems a health, New York: 1990, 27 34 science, Colombia University School of public
21. Taming, A., Bind, N., Mahesh P. and Defender S. Sexual Behaviors and Risk Perceptions among Young Men in Border Towns of Nepal. Asia-Pacific Population Journal. 20 (2): 195.210
22. Gerand, Land Roger G. Alcohol Abuse and stage of HIV disease in intravenous drug abusers. Journal of the Royal Society of Medicine 2006 89: 389 392

23. Dilorio C, Dudley WN, Soet JE, McCarty F. Sexual possibility situations and sexual behaviors among young adolescents: the moderating role of protective factors Adolesc Health. 2004: 35:528.
24. Severing JA, Adler N. Witt S, Ellen J. The Influence of parental monitoring on adolescent sexual initiation. Arch Paediatric Adolesc Med. 2005. 159:724-9.
25. Bachanas, PJ, Morris MK, Lewis Gess JK, et al... Predictors of risky sexual behavior in African American adolescent girls: implications for prevention interventions'. Pediatr Psychol. 2002, 27(6):519-30.
26. Ruchowa, NK, Modeste, N., Montgomery, S., Fox CA, Exploring family factors and sexual behaviors in a troup of Black and Hispanic adolescent males. Am J Health Behave. 2003 27():63-74.
27. Villarruel AM, Jemmorr JB, emmott LS, Ronis DL. Predictors of sexual intercourse and condom use intention among Spanish dominant La ho youth: A test of the planned behavior theory. Knims Res, 2004 53 172- 81.
28. Sesanderowitz J. Making Reproductive Health Services Youth Friendly, Focus on adults, Research program and policy series, 1999
29. WHO, Protecting young people from HIV and AIDS the role of health services, Geneva World Health Organization, 2004

PROGRAM BRIEFS

ESOG PMTCT Project

The most significant source of HIV infection in children and infants is transmission of HIV from mother-to-child during pregnancy, labor and delivery, or breastfeeding Moreover, prevention of mother to child transmission PMTCT of HIV services play a central role in the fight to eliminate pediatric HIV by preventing new infections and by providing the services needed to ease the burden on HIV infected women. Ethiopian Society of Obstetricians and Gynecologists (ESOG) has been implementing the project "Expansion and Strengthening of the Prevention of Mother to Child Transmission of HIV (PMTCT) Services in Private Health Facilities in Ethiopia" for the past five years with funding from the U.S. Department of health and human services (HHS), Centers for Disease Control and Prevention (CDC) Under the President's Emergency Plan for AIDS Relief (PEPFAR) in accordance with the ESOG-CDC Cooperative Agreement.

The general objective of the project is to contribute to the reduction of HIV transmission in the country with extensive training and promoting wide application of the recommended PMTCT intervention strategies in the private health sector, which increasingly are becoming important allies in the fight against HIV/AIDS. It has been implemented in collaboration with Federal Ministry of Health (FMoH), Federal HIV/AIDS prevention control office (FHAPCO), Regional Health Bureau (RHB), regional HAPCOs, partner NGOs (mainly JHUT sehai) and private health institutions. The project target facilities are all private hospitals and special maternal and child health (MCH) clinics in the country. Currently the number of target facilities supported by the project and providing the standard PMTCT services has grown to 63 in seven administrative regions of the country i.e. Addis Ababa, Amhara, Oromia, SNNPR, Dire-Dawa, Harrar and Somali regions

The project implementation include diverse technical support activities at all levels to initiate and maintain standard PMTCT service delivery at the target facility level.

The major activities of the PMT project include

1. Provide technical and material assistance i initiating the standard PMTCT services and in strengthening the existing services and practices; which include:
- Training of health care providers
- Availing HIV rapid test kits
- Availing ARVs for PMTCT Avail DBS collection tools
- Provide PMTCT registers & monitoring tools
- Regular supportive supervision
2. Regular site support & of mentorship providers facilities through the site support team (physician clinical mentor, Nurse mentor & M&E officer) to assure: Routine offering of HTC for women and their partners during ANC visits, labor & delivery, post partum and other MNCH points of care.
- Point of Care (POC) HIV rapid tests
- WHO clinical staging and immunological (CD4) staging of HIV infected mother
- ARV prophylaxis for HIV+ mothers and exposed infants
- Early initiation of HAART
- Exposed infant follow up according to national guidelines,
3. Provide technical support to FMOH and RHBs and support initiatives to expand PM TCT services in the private sector.
4. Support integration of PMTCT with MNCH services and strengthen linkages of HIV positive pregnant women to treatment and care services.
5. Develop tools job aids as necessary

So far the project has been implemented successfully, achieving its objectives. The project has trained 762 eligible health care providers (including 48 Gynecologists and 28 pediatricians) from the target facilities in the provision of standard PMTCT services.

In the past budget year (2011/2012) alone 33,644 pregnant women were provided with HIV counseling and testing for PMTCT and 696 HIV positive pregnant women provided with a complete course of ARV prophylaxis in a PMTCT setting in the project supported facilities. In addition 620 babies born to HIV positive women were provided with NVP AZT prophylaxis according to the national standards.

In the project implementation process a number o challenges were faced and important lessons learned. The major challenges faced by the project include

1. Lack of experience in implementing comprehensive PMTCT services in the private health sector.
2. High staff turnover and small staff number per facility versus national recommendations
3. Difficulty to completely comply with national recommendations and MOU
4. Difficulties in exposed infant follow-up due to
   - Charging for service for every visit
   - Cost of Co-trimoxazole refill
   - Shortage of DBS tools
   - Lack of pediatric ART services in many facilities
   - Referral networking and tracing mechanisms are not well established
5. Occasional shortage of PMTCT service delivery supplies.
6. Low partner testing rate
7. Problem in quality of record keeping and reporting.

In the current budget year 2012/2013) of implementation the project has finalized its preparation to increase the number of facilities supported and providing the standard PMTCT service to 65 and to increase the number of pregnant women provided with comprehensive PMTCT services with known HIV status (includes women who were tested for HIV and received their results) to 37.252.

For more information: www.esog.org.et

Abt Associates inc.

Ethiopia Health Sector Financing reform project

The Ethiopia Health Sector Financing Reform (HSFR) project has built on successful health financing efforts already underway in the Oromia, Southern Nations, Nationalities, and Peoples (SNNP) and Amhara Regions of Ethiopia, With Abt Associates' technical assistance to the Government of Ethiopia, health financing initiatives have resulted in improvements in decentralized budgeting and financial management, as well as increased retention and more effective use of health resources at the facility level.

over the past decade, Ethiopia has moved incrementally into increasingly complex health financing issues from user fees, waivers, and exemption policies to hospital and health facility governance and mechanisms. Most recently, Ethiopia has complemented these earlier initiatives with new policies for social health insurance to cover the formal sector and community based health insurance (CBHI or informal and rural populations, HSFR aims to integrate these initiatives in order to improve access to quality health care for a majority of Ethiopians in a fiscally responsible fashion. The four major goals of the project, along with examples of interventions undertaken to achieve each goal are presented be low

Goal 1: Enhanced quality and equity of essential public health services in health centers and hospitals

Activities related to this goal are focused in regions where health care financing activities are already underway (SNNPR, Oromia and Amhara). Despite significant gains related to health financing reform, there are areas that need strengthening, which include:

- Limited financial management capacity at the district and health facility levels to promote the health financing reform measures.
- Capacity of facility managers to properly plan and utilize fees for quality improvement.
- Effective targeting of fee waiver beneficiaries, and administration of the fee waiver program at woreda and facility levels.

Activities und achieve this goal fall into the three main areas revenue retention for improvement waivers for the poor to increase access to health services and facility governance initiatives HSFR interventions focus on capacity building for managers at regional, district and facility levels to implement these elements of the health reforms. Project staff have developed and disseminated manuals and tools to implementation of the financial guide interventions, conducted formal training ages at all levels, and integrated oversight for and implementation into the supportive supervision system implemented by Regional Health Bureau staff.

Goal 2: Expansion of policy frameworks, legal and operational guidelines

This goal covers initiation of the financing reform processes in regions that are in the process of full adoption and implementation: Addis Ababa, Dire Dawa, Harari, Tigray, Gambela Beshangul/ Gumz, Afar and Somali The project has made significant progress towards achievement of the following objectives in support of this goal:

- Establishing the legal foundation and policy directives for implementation of the health financing reforms in each of the expansion regions except for Afar and Somali
- Building capacity at the regional, district and facility levels to implement the reforms.

Major areas of activity include: development of the legal and policy foundations required for actual implementation of the reforms, and building capacity to adapt, provide training for and implement the health financing reform activities.

Goal 3: Improved access to health insurance schemes

This is a major area of effort for the project, and has been given high priority by both the Government of Ethiopia and USAID While public sector employees will be covered by social health insurance, most Ethiopians are employed in rural and informal sectors and require CBHI. Together with the initial reforms, both of these insurance schemes will help mitigate the risks of out-of-pocket spending for health care. Activities under this goal are designed to:

- Build capacity to design, administer and monitor health insurance.
- Establish financial protection for the population to mitigate risk associated with catastrophic medical events.

Main areas of activity include piloting CBHI schemes in four regions and 13 wore (in SNNPR, romia, Tigray and Amhara); monitoring and evaluating these pilots in order to develop recommendations for scale-up and technical support for design and implementation of the social health insurance program for individuals employed in the formal sector.

Goal 4: Systematic program learning to inform policy and program investment.

The key purpose of systematic program learning is address the lack of evidence in the area of health financing for informed policy making and program design and revision. Activities undertaken to achieve this goal will aim at:

- Addressing long-standing structural problems in the health financing system.
- Developing a strong evidence base for decision-making.

During years 2 and 3, the project supported the Federal Ministry of Health to implement the third and fourth Ethiopia National Health Accounts (NHA) and the fifth NHA is underway. This exercise encompassed a national household health expenditure survey, as well as a targeted survey of individuals and families living with HIV. The general NHA report, along with subaccount reports on HIV/AIDS, Malaria, TB, Reproductive Health, Child Health and the Health Information System were disseminated nationally Other activities under this goal include targeted studies related to health financing barriers; support for a distance learning program in public health management for counterparts and developing and managing a national health financing knowledge base.

For more information www.abtassociates com

The International Training & Education Center for Health (TECH) was founded in 2002 by the Health Resources and Services Administration (HRSA) of United States Government (USG) in collaboration with the Centers for Disease Control and Prevention (CDC). ITECH, being a collaboration of the University of Washington and the University of California San Francisco, works in the Caribbean, Africa and South Asia.

Vision

ITECH envisions a world in which all people have access to high quality, compassionate, and equitable health care.

Mission

LTECH is a global network that works with local partners to develop skilled health care workers and strong national health systems in resource-limited countries. ITECH promotes local ownership to sustain effective health systems.

Operating Principles

- Honoring A Shared Vision
- Offering A Rewarding Work Environment
- Acting With Integrity
- Producing High Quality Work
- Flexibility
- An Attitude of Hope

ITECH Ethiopia

Since 2003, ITECH Ethiopia has been working in close collaboration with FHAPCO FMOH, DACA, R HBs and local Universities by providing technical and financial assistance to support sustainable human and institutional capacity development for HIV prevention, care and treatment services,

In Ethiopia ITECH was the only USG University working with the CDC Ethiopia, in the HIV/AIDS program as a result it was the sole trainer and implementing partner organization for accelerated scale-up of ART nationwide. Since 2005 ITECH was mandated to work in the three northern regions of Ethiopia, namely Amhara, Afar, and Tigray.

Currently I-TECH provides and array fo technical, clinical, laboratory, and operational support to 63 health care sites of those northerner regions.

Table: I TECH supported Facilities per region

	Region			
Facility	Amhara	Tigray	Afara	Total
Hospital	18	14	5	37
Health Center	0	0	22	22
Regional Lab	2	1	1	4
Total	19	15	16	63

ITECH supports the implementation of 18 different programs, at national regional and facility level in partnership with Federal MoH Regional Health Bureaus, Regional HAPCO, Universities, NGOs and PLWHA Associations. The programs include Treatment (Adult), 2) Care and Treatment (Pediatrics), 3) Care and Support 4) Case Management and Mother Support Group (CM&MSG), 5) Maternal Neonatal and Child Health (MNCHVPMTCT 6) Preservice Education Strengthening, 7) Institutional in service Training Capacity Development, 8) TB. TB/HIV and MDR TB, 9) Sexually Transmitted Infections (STT), 10) Infection Prevention (IP), 11) HIV Counseling and Testing (HCD,12) Mentoring, 13) Partnerships LMI and Infrastructure 14) Laboratory System Strengthening, 150 Strategic Information, 16) Nursing, 17) Quality Management and 18) Model Facility Initiative programs.

Program Highlights

Capacity Building Mentoring Teams: ITECH currently has 16 Capacity Building clinical mentoring teams (CBTA: 8 and CBT-B: 2) providing technical assistance to the 63 LTECH facilities. FBT A comprises physician, nurse mentors that regularly visit Assistance to all health facilities.

In Addition, I-TECH FBT B comprises senior clinical advisors (pediatrician and internist), nurse of mentor and lab technologist that mentor high case load facilities, serve as mentor of mentors d provide distant consultations. The clinical advisors b the capacities of Medical Universities teaching hospitals to strengthen local health network systems. I-TECH's site level mentoring focuses on human capacity building through onsite training, continuous medical education and case based discussion.

Laboratory System Strengthening: ITECH, partnering with the Ethiopian Health and Nutrition Research Institute (EHNRI) and RHBs, provides technical assistance to 63 facilities including four regional labs.

Training I-TECH plays a national leadership role in clinical training and curricula and guideline development. As of March 2011, about 15,103 health care providers are trained and 13 training curriculums were developed in collaboration with FMOH.

Institutional Capacity Building: Besides human capacity building ITECH supports infrastructure development through facility renovations (clinical and laboratory) and need based functional restoration, furniture and equipment supplies for the same.

For the Future

In line with PEPFAR II direction and GHI, ITECH is focusing on health system strengthening, local ownership and sustainability.

For more information: www.go2itech.org/where we work Ethiopia

INSTRUCTIONS TO AUTHORS

1. **Type of Articles**

The Ethiopian Journal of Reproductive Health (EURH) publishes original articles, review region. The ERHJ aims program briefs, and commentaries on reproductive health issues in Ethiopia, and the African relevant information on creating a forum for the reproductive health community to disseminate best practices, and reproductive health

Original Articles: Articles reporting on original research using quantitative and/or qualitative studies could be submitted to EJRH.

Review Articles: Review articles on all aspects of reproductive health could be considered for publication in the EJRH.

Commentaries: Commentaries on any aspects of reproductive health in Ethiopia or the African region will be considered for publication in the EURH. by governmental or non-governmental

Program Briefs: A or two pages of description of a program run short summaries about the objectives, organizations could be submitted for These briefs should give strategies for implementation, and expected outputs of programs that are executed by different organizations.

Short reports: to Reports: Preliminary research findings or interesting case studies could be presented in a summarized the journal.

2. Uniform Requirements

In order to fulfill requirements for the journal, he following instructions have to be followed by author

Manuscript layout: Manuscripts should be written in English and ripped double paced leaving generous Pages should be consecutively numbered. The body of the manuscript should be organized under a headings and sub-headings such as introduction, methods, result discussion, acknowledgements and references

Title page: The title page should have title of the article name of each author and institutional affiliation, and address of the corresponding author

Abstracts: Articles should have abstracts of not more than 250 words. It should summarize the background, objective, major findings and conclusions.

Tables and Figures: All rabbles and figures should be sub mired on separate sheets of paper and be clearly in the order of their citation in the text. A should be able to read only the tables and easily undermined information without reading the text. References have to be numbered consecutively in the order in which they are first mentioned in the text References must also follow the Vancouver system.

3. Submission of Manuscripts

Manuscripts should be submitted to the Editor-in-Chief in accompanied by a cover letter signed by all authors. In addition, an electronic copy of the article has to be submitted via email to the journal. When authors are authors will be required to submit a filled "Author (s) Guarantee Form which certifies that all have contributed to the work submitted, and that the content of the manuscript has neither been previously published nor being considered for publication elsewhere Please note that Case Reports and faxed submission of manuscripts will not be accepted.

Authors could submit manuscripts to the journal at the following address:

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